

A way to get VV wealth,

Math. Poole

BY *his* book

Approued Rules of Practice in good Husban-
had as a ~~admir~~dry and Huswiferie. *isrator to his*

Father

CONTAINING

W. Poole Esq.

The foure principall Offices which support
and maintaine a Familie.

AS

- I. The husbanding and *inriching* of all *sorts* of grounds, making the *barren* equall with the *most* fruitfull: with the reducing to their first perfection all grounds whether arable or pasture, spoyled by the ouerflowing of Salt water, or sea-breaches, and the *inriching* of the Hop-garden, & other knowledges not published before: Also the *presernation* of Graine; and a computation of *Men & Cattels* labors.
- II. The ordering and *curing*, with the *natures*, *breeding*, *vse*, & *feding* of all *sorts* of *Cattell* and *Fowle*, fit for the *vse* of *man*: As also the *riding* and *dieting* of *Horses*, either for *Warre* or *Pleasure*.
- III. The office of the *English* Housewife in *Physicke*, *Surgerie*, *Extra-ction* of *Oyles*, *Banquetting* *stufte*, *Ordering* of *Feasts*, *Preseruing* of *Wines*, *Conceited secrets*, *Distillations*, *Perfumes*, *ordering* of *Wooll*, *Hempe*, *Flax*, *Dying*, *vle* of *Dayries*, *Malting*, *Brewing*, *Baking*, and the profit of *Oates*.
- IIII. The office of *Planting* and *Grafting*, and the *inriching* of grounds for that purpose: the office of *Gardening*, and the *ornaments* thereto: with the husbanding of *Bees*, & other things of that *nature*.

The first three Bookes gathered by G. M. The last by Mr. William Lawson, for the benefit of the Empire of Great Britain.

And all these newly corrected and augmented by the Authors.

Printed at London for Roger Jackson, and are to bee sold at his shop neere Fleetstreet Conduit. 1625.

Approved by the
The following

I The following

of the following

The following

The following

The following

The following

Markhams farwell to
HVSBANDRY

or,
The inriching of all sorts of Barren and
Sterile grounds in our Kingdome, to be as fruit-
full in all manner of Graine, Pulse, and Grasse, as
the best grounds whatsoever:

Together with the annoyances, and preser-
uation of all Graine and Seede, from one yeare
to many yeares.

As also a husbandly computation of men and cattels
dayly labours, their expences, charges, and
uttermost profits.

Newly reuiewed, corrected, and amended: toge-
ther with many new Additions, and
cheape Experiments:

*For the bettering of arable pasture, and woody grounds: Of
making good all grounds againe, spoiled with ouerflowing of
salt water by sea-breaches, as also the inriching of the hop gar-
den, and many other things neuer published before.*

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TO THE RIGHT
VVORSHIPFULL
and his most worthy friend
M^r Bonham Norton Esquire.

Worthy Sir :



Nowledge which is the diuine mother of certaine Goodnesse, neuer came vnwelcome to a knowing Iudgement; no more I hope shall this my labour to your worthy Selfe, since doubtlesse you shall finde in it many things New, some things necessary, and nothing which hath not in it some particular touch of profit: It is a worke your former encouragements to my other labours did create in me; and the wants you worthily found, I hope shall bring you supplies both wholesome and becomming. The experience I assure your Goodnesse, was the expence of a bitter and tedious Winter; but the contentment (in gaining my wish) made it more pleasant then all the three other Seasons. What euer it be, it comes to you full of loue, full of seruice: And since I know Vertue measureth all things by its owne goodnesse; it is enough to me, that I know you are that Vertue. In you is power to iudge; in you is Authoritie to exercise Mercy, let them both flye from your Goodnesse, with that mildnesse, that in them my hopes may be crowned, and my Selfe rest euer at your seruice,

GERVASE MARKHAM.

The Preface to the READER,

Shewing the use, profit, and truth of the Worke.

Additions
this whole
Preface.



He use and application of this Worke (gentle Reader) is to reduce the hard, Barren and Sterile grounds, such as were neuer fruitfull, or such as haue been fruitfull and are made barren by ill husbandry, to bee generally as fruitfull as any ground whatsoever; from whence shall ensue these generall profits.

First, plenty of Corne and Pulse, because all grounds being made able and apt for tillage, the Kingdome may afford to some for one bushell that is now; hereafter five hundred, so mighty great are the unfruitfull waists of Heather, Downe, Moeres, and such like, which at this day lie unprofitably; and to this abundance of Corne will arise an equall abundance of Grasse and Pasture, for as the best ground of the worst, is to bee converted to Pasture, and the worst to Tillage, so that worst being tilled and drest, when it hath done bearing of Corne, (which will be in fixe or seuen yeares) shall for as many yeares more beare as good pasture either for breeding or feeding as can be required, and then being newly drest againe, shall newly flourish in its first profit.

Secondly, whereas in fruitfull places the third or fourth part of all arable ground is lost in the fallow or tilth ground, now in these barren grounds you shall keepe no fallow field at all, but all shall beare either Corne or Grasse, that fallow part seruing to pay for the charge bestowed on it and the rest.

Lastly, wheras in fertile grounds you cannot haue either Wheat, Barley, or Rye, under two, three, foure, five, and sometimes fixe senerall plowings, as fallowing in Ianuary and February, Stirring in Aprill and May, Foiling in Iuly and August, Winter-ridging in October and Nouember, and Sowing with other Ardors; now in these hard grounds restored you shall not plow aboue twice at the most, to the saving of the Husband-mans paines, his Cattell trauell, and a larger limitation of time for other necessary businesses.

For the truth of the Worke he that will ride into the barren parts of Denon-shire or Cornwall, into the mountainous parts of Wales, into the hard parts of Middlesex or Darby-shire, or into the cold parts of Northumberland, Camberland, Westmoreland, Lancashire, or Cheshire, shall find where industrie is used, a full satisfaction for all that is here written.

Farewell.

Thine, G. M.



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*An excellent way to take Moles, and to
preserue Grounds from such
annoyance,*

PVt Garlike, Onions, or Leekes, into
the mouthes of the holes, and they
will come out quickly as amazed.



MARK HAMS

Farewell to Husbandry.

CHAP. I.

The nature of Grounds in generall: But particularly of the barren and sterile earth.



TO come to the full effect of my purpose without any preambulation, or satisfaction to the curious, for to the honestly vertuous are all mine endeavours directed: you shall vnderstand that it is meet that every Husbandman be skilfull in the true knowledge of the natures of Grounds; as which is fruitfull, which not: of which, in my first Bookes I haue written sufficiently; nor doe I in this Booke intend to write any tittle that is in them contained; for as I loue not Tautalogie, so I deadly hate to wrong my friend. Grounds then, as I haue formerly written in my first Books, being simple or compounded; as simple Clayes, or simple Sands; or compounded of Clayes, Sands, or Grauels together; may bee all good, and all fit to bring forth increase, or all euill and barren, and vnfit for profit: for every Earth, whether it be

B

simple

simple or compounded, whether of it selfe or of double mixture, doth participate wholly with the Clyme wherein it lyeth; and as that is more hot, or more cold, more moist, or more dry, so is the Earth euer more or lesse fruitfull: yet for the better vnderstanding of the plaine countiman, you shall know that both the fruitfull and vnfruitfull Ground haue their seuerall faces and characters whereby they bee as well knowne as by the Clyme or situation of the Continent; for that ground which though it beare not any extraordinary abundance of grasse, yet will loade it selfe with strong and lusty weeds, as Hemblocks, Docks, Mallowes, Nettles, Ketlockes, and such like, is vndoubtedly a most rich and fruitfull ground for any graine whatsoever. Also, that ground which beareth Reede, Rushes, Clover, Diisie, and such like, is euer fruitfull in Grasse and Herbage; so that small cost and lesse labour in such Grounds, will euer make good the profit of the Husbandman: But with these rich Grounds at this time I haue nothing to doe.

Knowledge
of barren
Grounds.

To come downe then to the barren and vnwholesome Grounds, you shall vnderstand that they are to be knowne three seuerall wayes; first, by the Clyme and Continent wherein they lye; next, by their constitution and condition; and lastly, by outward faces and characters. By the Clyme and Continent, as when the ground lies farre remote from the Sunne, or when it lyes mountainous and high, stony and rockie; or so neere vnto the skirts and borders of the Sea, that the continuall Fogges, Stormes, Mysts, and ill Vapours arising from thence, doe poyson and starue the Earth: all which are most apparent signes of barrennesse. By the Constitution and Condition, as when the ground is either too extreemly cold and moist, or else too violently hot and dry; either of which produ-
ceth

ceth much hardnesse to bring forth, and sheweth the earth so lying, to bee good for little or no profit. By the outward Faces and Characters, as when you see (in stead of Grasse, which should be Greene, flowry, and thicke growing) a pale thin mossie substance couer the earth, as most commonly is vpon all high Planes, Hearthes, Downes, and such like : or when you see the ground couered with Heath, Lyng, Broome, Braken, Gorse, or such like, they be most apparent signes of infinite great barrennesse, as may be seene in many Mores, Forests, and other wyld and wooddy places. And of these vnfertill places, you shall vnderstand that it is the Clay ground, which for the most part brings forth the Mosse, the Broome, the Gorse, and such like : the Sand, which bringeth forth Brakes, Lyng, Heath, and the mixt earth, which vtters Whinns, Briars, and a world of such like vnnaturall and bastardy Issues.

Thus hauing a true knowledge of the Nature and Condition of your ground, you shall then proceede to the ordering, careing, and dressing of the same, whereby it may not onely be purged and clenfed from those faults which hindred the increase thereof, but also so much bettered and refined, that the best ground may not boast of more ample increase, nor your more fruitful placed neighbours exceede you in any thing, more then in a little ease.

CHAP. II.

Of the Ordering, Tilling, and Dressing of all sorts of plaine barren Clayes, whether they be simple or compounded.

THou whom it hath pleased God to place vpon a barren and hard soile, whose bread must euermore be
B₂ grounded

grounded with sweat and labour, that maieft nobly and victoriously boast the conquest of the Earth, hauing conquered Nature by altering Nature, and yet made Nature better then she was before : thou I say. that takest this honest delight in goodnesse, hearken vnto these following Precepts.

The first
enriching
of barren
Grounds.

As soone as thou hast well pondered and considered the nature of thy ground, and dost finde that it is altogether barren and vnfruitfull, the Clyme and condition not suffering it to bring forth any thing of worth or profit, and that thou hast well weighed what manner of Earth it is, as that namely it is either a simple Clay, or a Clay so mixt with other earths, that yet notwithstanding the Clay is still most predominant, thou shalt then select or chuse out of this earth so much as to thy selfe shall seeme conuenient, it being answerable to the strength of thy Teame, and the abilitie of thy purse and labour to compasse ; and this Earth so chosen out, thou shalt about the beginning of May, in a faire season, breake vp with a strong Plough, such as is generally vsed in all strong Clay grounds, the Share being rather long then broad, and the Colture rather somewhat bending then straight and euen, according as the nature of the ground shall require, which every simple plowman will soone finde out in turning vp two or three furrowes; for according to the cutting of the earth so must the Husbandman fashion the temper of his plough.

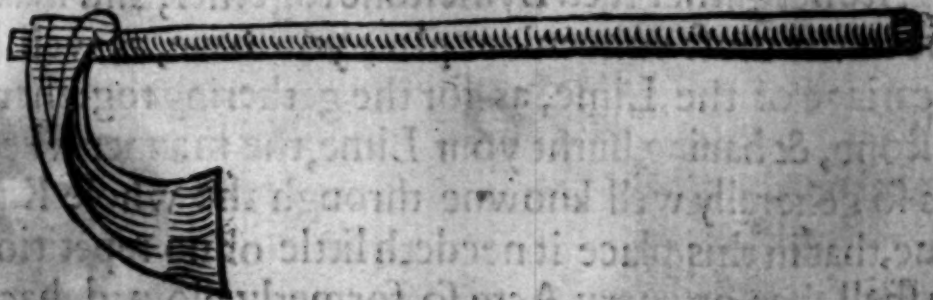
The manner
of plowing.

Now for the manner of plowing this bad and barren earth, if the ground lye free from water (which commonly all euill barren earths doe) you shall then throw downe your furrowes flat, and betwixt euery furrow you shall leaue a balke of earth halfe as broad as the furrow, and so goe ouer, and plow your whole earth vp, without making any difference or distinction of lands: but if you feare any
annoyance.

annoyance of water, then you shall lay your furrowes more high, neere, and close together, diuiding the ground into seuerall lands, and proportioning euery land to lye the highest in the midst, so that the water may haue a descent or passage on either side.

Now so soone as you haue thus plowed vp your land, and turned all the swarth inward vnto the earth, you shall then take Hacks of yron, well steeled and reasonable sharp, such a competent number, as or your purse or power can compasse, or the greatnesse of your ground requireth; for you shall vnderstand that one good hacker, being a lusty labourer, will at good ease hacke or cut more then halfe an Acre of ground in a day; and with these hackes you shall hew and cut to peeces, all the earth formerly plowed vp, furrow by furrow, and not the furrowes onely, but also each seuerall balke that was left betweene, & any other Greene swarth whatsoever the plough had escaped, and it shall bee cut into as small pieces as conueniently you can; for thereby is your mould made much more mellow and plentifull, and your seed at such time as it is to be cast into the earth, a great deale the better and safer couered, and much more sooner made to sprout and bring forth increase. Now for the shape and fashion of these Hacks, you shall behold it in this Figure.

Hacking of
Ground.



When you haue thus hackt all your ground, and broke in peeces all hard crusts and toughnesse of the swarth, you shall

Sanding of
Ground.

shall then immediately, with all the conuenient speed you can, (because time is very precious in these labours) if you be neere vnto any part of the Sea-coast, or to any other Creeke or Riuer, where the salt water hath a continuall recourse, thence fetch (eyther on horse-backe, or in Cart, or other Tumbrell, such as the nature of the Country, or your owne ease can afford) great store of the salt Sand, and with it couer your ground which hath beene formerly plowed and hackt, allowing vnto euery Acre of ground, threescore or fourescore full bushell, of Sand, which is a very good and competent proportion; and this Sand thus laid, shall be very well spread and mixed among the other hackt and broken earth. And herein it is to be noted, that not any other sand but the salt is good or auailable for this purpose, because it is the brine and saltnesse of the same which breedeth this fertility and fruitfulness in the earth, choaking the growth of all weedes and bad things, which would sprout from the earth, and giuing strength, vigour, and comfort to all kinde of Graine or Pulse, or any fruit of better nature.

Lyming of
Ground.

When you haue thus sanded your earth, you shall then if you haue any Limestone about your Grounds (as barren earth: are seldome without) or if you haue any quarries of stone (which are seldome vnaccompanied with Limestone) gather such Limestone together, and make a Kilne in the most conuenient place you haue, as well for the cariage of the Lime, as for the gathering together of the stone, & hauing burnt your Lime, the manner whereof is so generally well knowne through the whole Kingdome, that in this place it needeth little or no repetition; you shall then on euery Acre so formerly plowed, hackt, and sanded, bestow at least forty, or else fifty bushels of Lime, spreading and mixing it exceedingly well with the
other

other sand and earth; and herein is to bee noted, that the stronger and sharper the Lime is, the better the earth will be made thereby, and the greater increase and profit will issue from the same; neither shall you need to respect the colour & complexion of the Lime, as whether it be purely white (as that which is made from chalke) or gray (as that which is made from the small Lymestone) or else blackish browne (as that which is made from the great stone and maine Quarrie) since it is the strength & goodnesse of the Lym, not the beauty and colour which brings forth the profits.

Now that this Lym is of excellent vse and wonderfull profit, doe but behold almost all the Countries of the Kingdome where there is any barrennesse, and you shall see how frequently Lym is vsed, insomuch that of mine owne knowledge in some Countries where (in times past) there was one Bushell made or vsed, there is now many loads, and all risen from the profitable experience which men haue found in the same.

Now, when you haue thus limed your ground; you shall then take of the best measure you haue, as Oxe, Cow, or Horse dung, straw rotted either by the lytering of Beasts, or by casting vpon the High-waies; the mud of Lakes, Ponds or Ditches; the soyle of yong Cattell made in the Winter time by feeding at stand Heakes, or any such like kinde of Ordure; and this measure or compasse, you shall cary forth either on Horse-backe; or in Carts or Tumbrels (according as the Country will afford) and you shall lay it and spread it vpon your ground so formerly plowed, hackt, sanded, and lymed, in very plentiful manner, so farre forth as your prouision will extend: for it is to be vnderstood, that barren & hard earths can neuer be overladed with good measure or compasse, since it is only the

Measuring
of ground.

Times for
all labours.

the want of warmth and fatnes, which meaurure breedeth, that causeth all manner of fruitfulnessse.

After you haue thus measured all your ground, it is to be supposed that the season of the yeare will be well shot on, for the labour of sanding will take little lesse then two months, your ground being of any indifferent great quantitie, except you haue the assistance and helpe of many of your friends, which is a courtesie that euery Husbandman may imbrace, but not trust vnto; for I would not wish any man that hath not Tenants to command, to presume on other friends, lest they faile him, and so his worke lye halfe done, and halfe vndone, which is a great Character of negligence and improuidence: but let euery one proportion their labours according to their owne strengths, and the number of their ordinary families. The lyming of your ground will take at least halfe so much time as the sanding; & the meanuring rather more then lesse then the lyming; so that by any reasonable computation of time, beginning to plow your ground at the beginning of May, ere it bee hackt, sanded, lymed, and measured, Michaelmas will bee come, which is the end of September: for I allow the Moneth of May to plowing and hacking; Iune and Iuly, for sanding; August, for lyming; and September, for meanuring. So then to proceed on with your labour, at Michaelmas, or from that time to the end of October, you shall beginne to plow ouer that ground againe which formerly you had plowed, hackt, sanded, lymed and measured; and at this later plowing, you shall plow the ground somewhat deeper then you did before; and taking a good stich (as they call it in husbandry) you shall be sure to raise vp the quicke earth, which had not been stirred vp with the plow before, making your furrowes greater and deeper then formerly they were, and laying them closer and rounder toge-

Second
plowing.

together then they were before; and in this ardor or later earing, you shall be carefull to Plow your ground as clean as you can, without balkes or other escapes in Husbandry, and as you thus plow your ground, you shall haue certaine Hackers, with their hacks, to follow the Plow, and to cut the Earth and furrowes into very small pieces, as was formerly shewed in the hacking & cutting of the first Ardor: then so soone as your ground is thus plowed and hackt, you shall take a paire or two of very strong and good yron Harrowes, and with them you shall go ouer your ground, tearing that which was formerly plowed and hackt into more smaller pieces then before, and raising vp the mould in much greater abundance then was formerly seene: which worke once finished, you shall then take your Seed which would be the finest, cleanest, and best Wheate you can provide, and after the manner of good Husbandry, you shall sowe it on the ground very plentifully, not staruing the ground for want of Seed (which were a tyrannous penury) nor yet choking it with too much (which as lauish a foolery) but giuing it the full due, leaue it to the earth and Gods blessing.

Second
hacking.

First har-
rowing.

Of sowing
the Seede.

Now so soone as you haue thus sowed your Seede, forthwith you shall take all the Harrows againe, harrowing the Seede into the earth, and couering it close and wel with all care and diligence; and in this latter harrowing, you shall haue great respect to breake euery clot as much as you can, and so stir vp and make as much mould as you can, and the finer such mould is made, the better it is, so it cover deepe and close; for you shall vnderstand, that all these kind of barren Clayes, are naturally tough, cold, and binding, whereby they stifle and choke any thing that growes within them; for the naturall toughnesse of the earth will not giue any thing leaue to sprout, or if it doe

The second
harrowing.

Faults in the
earth.

C

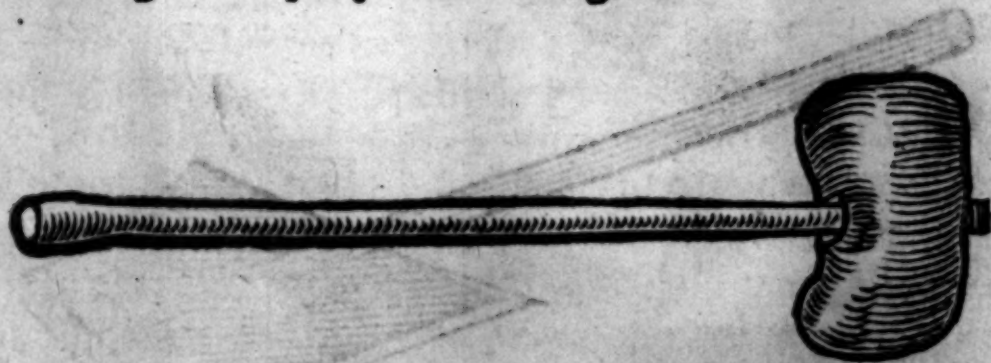
sprout,

sprout, the binding nature thereof, so fetters and locks it within the mould, that it cannot issue out, or if it do (with extreame struggling) rise through the pores of the same, yet doth the cold presently starue the root and make the stemme vtterly vnable to bring forth fruit, or any profit at all, so that except the toughnesse be conuerted to a gentle loosenesse and easie diuiding of it selfe, the coldnesse vnto warmth, and the hard binding vnto a soft liberty, there can be small hope of commodity which this manner of dressing the earth bringeth to passe; for the mixture of the sand, takes away the toughnesse; the Lime brings heat, and the manure comfort and liberty: as for the hacking and cutting the earth, that is to make all the rest simbolize and mixe together: for as if any Dispensatory, make a medicine, and cast his ingredians confusedly one vpon another, without care of mixture, melting or dissolution, shall find but a corrupt, disorderly, and ill compounded receit; so he that dresseth and manureth his ground, and doth not by hacking, plowing, or some other husbandly course, mixe the earth and the compasse perfectly well together, shall seldome find profit from his seede, or find any man of wit desirous to become his imitator. Now I must confesse, that some easie grounds of light and temperate nature, will mixe very well and sufficiently by the helpe of the Plough onely; but this barren hard earth of which I now write, must onely be broken by this violent and extreame labour, or else there will neither be mould, earth, nor any other couerture for the seed, but onely foule, great, and disorderly clots and lumps, through which the graine can neuer passe, and that which lyeth vnconuered will be made a prey to fowle and other vermine which wil howerly destroy it.

After you haue sowed and harrowed the ground, you shall

shall then see if there remaine any clots or hard lumps of earth vnbroken, which the teeth of the Harrowes are not able to teare in pieces (as it is very likely you shall perceiue many) for these hard barren earthes which are plowed vp in their greene swarthes, are nothing neere so easily broken and brought to mould, as are the mellow soft earths which haue been formerly plowed many times before, because the hard and intricate roots of the Grasse, Mosse, and other quick substances growing vpon the same doth binde and hold the mold so close and fast together, besides the naturall strength and hardnesse of the earth, that without much industrious and painefull labour, it is impossible to bring it to that finenesse of mould which Art and good Husbandry requireth; therefore, as soone as you behold those clots and lumps to lye vndisseuered and vnbroken, you shall forthwith take good strong clotting beetles, or maules made of hard and very sound wood according to this proportion of figure.

Of clotting
Ground.

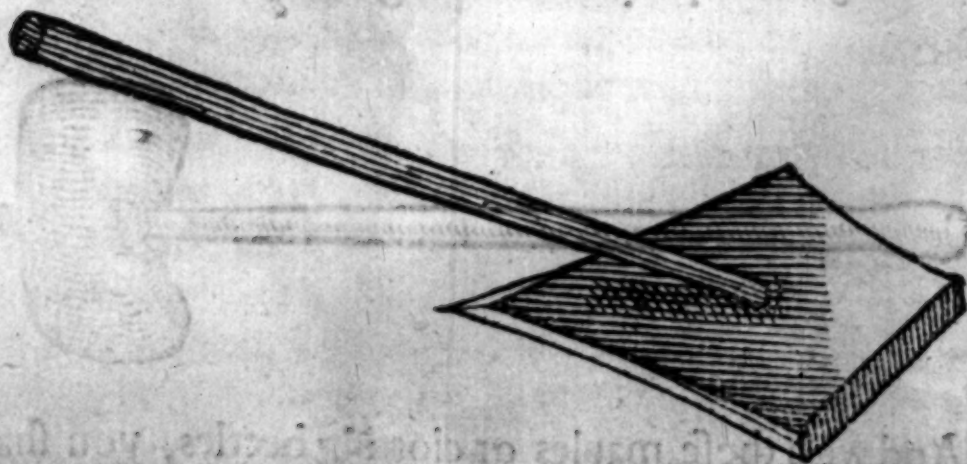


And with these maules or clotting beetles, you shall breake all the hard clots and lumps of earth in pieces, euen to so small dust, as possibly you can; because you are to presuppose, that these clots thus hard, tough, & vnwilling to be with any meanes digested into mould, are either not at all, or else very insufficietly mixed with the Sand, Lyme and other meanures; and therefore you must the rather
C 2
breake

breake them, that thereby they may mixe, and giue easie passage to the graine, and not like heauy poysses and dead lumpes lye and presse downe the Seede so that it cannot sprout.

An other
manner of
clotting.

But if it so fall out that partly by the hardnesse of the ill earth, partly through the season and drynesse of the yeare, that these clots and lumpes of earth will either not be broken at al, or at least so insufficiently that the mould wil not be any thing neere so fine as you would haue it; you shall then hauing done your best indeuour, let your ground rest till there haue falne a good ground shower or two of rain, which may wet the clots through and through; and then the next faire blast, you shall take your clotting beetles, but not those which you tooke before in the dry season, but some much lighter, broader and flatter, beeing made of thicke Ash-boards more then a foot square, and aboue two inches in thicknesse, according to this figure.



And with these flat maules and beetles, you shall breake all the vnbroken clots and lumps of earth which shal trouble or annoy your ground, making your Lands as plaine and smooth as is possible, so that the graine may haue easie passage forth; which labour as soone as you haue finished, you shall then referre the increase and prosperi-
tie

tie thereof vnto the mercies of God, who no doubt will giue his blessings according to thy labour and thankfulness.

As touching the trimming and weeding of this Corne, Of weeding after it is sprung a foot aboue the earth, or thereabouts, you shall vnderstand, that these hard barren grounds are very seldome troubled with weeds; for weeds, especially great, strong, and offensive weeds are the issues of rich and fertile soyles; yet, if through the trimming and making of this earth (which is not commonly scene) you doe perceiue any store of thyssles, or other grosser weeds to spring vp, you shall then in the Month of May, with hookes, nippers, and such like tooles, cut them away or pull them vp by the rootes, which indeed is the better manner of weeding.

Now here is to be vnderstood, that your ground being thus dressed and trimmed as is before shewed, you may very well for the first two yeares sow Wheat or Rye vpon it, but Wheat is the greater profit and more certaine seed; the third yeare bestowing but your fold of Sheepe vpon it, that is meanuring it with your sheepe, (for it is to be intended, that in these barren earths sheepe are the greatest stocke of which the Husbandman can boast) you may very well sowe it with barley, and haue a fruitfull and plentiful crop thereon: the next three yeares, you may sowe it with Oates; and the seventh yeare you may sowe it with small white Garden Pease or Beanes, according as you shall finde the strength and goodnesse of the ground, (for Beanes desire somewhat a richer soile then the Pease) then for three or foure yeares following the seven, you may let it lye at rest for grasse, and doubtlesse it wil yeeld you either as good pasture, or as good Medow as you can reasonably require. And then after the expence of this Seuerall feedes seuerall yeares.

time, it shall bee good that you dresse and order your ground againe in such sort as was formerly declared; and thus you may euery yeare dresse one or other peice of ground, till you haue gone ouer all your ground, or at least as much as you shall thinke expedient; and without faile, hee that is Master of the most fruitfullest and richest soyle, shall not boast of any greater increase then you shal, only your charge may be a little more, and so shall be also your commoditie, which shall make an amends for your charge; as for your toyles, yours shall be much the lesse, by a iust computation; for though you haue many labours, yet they are but Sommer labours, and neither hurt your owne body, nor your Cattell: whereas the Master of the rich soile is in continuall work both Winter and Sommer, buring twice so much to confound the superfluous growth of weedes as you doe to beget the increase of Corne; and whereas he must euer keepe a third or fourth part of his Corn-ground without fruit, you shall not keepe any which shall not yeeld you a sufficient commoditie.

Obiection.

Now me thinkes I heare in this place, to bee objected vnto me, that whereas I do prescribe the fanding of these barren Earths with the salt Sea-sand, and no other (as it is true, for all other fresh sand is vnauaileable) what if the ground doe lye so farre within the Land, that there is no salt sand within many score of miles of it, how then shall I make good my barren earth; sure to fetch sand so farre, will neuer equall the cost, or it may bee this experience hath no further limits then to such hard and barren earths as lye alongst the Sea-coast onely.

Answer.

To this I answer, that al-be this salt Sea-sand bee of infinite good and necessary vse, enriching grounds wonderfully much, yet is not this experience of bettering of barren soiles, so strictly bound thereunto, but that without
any

any vse of the same, you may make your earth as fruitfull in Corne or Grasse, as hath beene already formerly declared.

Therefore if your ground lye much within the Land, and farre from the Sea, so that this commodity of sand is not by any possible meanes to bee gotten, then you shall (hauing first lookt into the nature of your ground, and finding it to be by all charracters and faces a cold, barren, stiffe, dry Clay, yeelding nothing but a short mossie grasse, without any other burthen at all as is seene vpon most Plaines, and Downes of this Kingdome) first plow it and hack it as was before shewed in the former part of this Chapter, then in stead of sanding it, you shall lime it as before said, or rather a little more plentifully, then you shall manure it, after (a seede time) you shall plow it and hack it againe, then harrow it as before said; then to euery aker of ground, you shall take two bushels of very dry bay salt and in such manner as you sowe your Wheate, you shall sowe this salt vpon the ground, then immediatly after the sowing of the salt, you shall sowe your Wheat, which Wheat would bee thus prepared before you sowe it; the day before you are to sowe your graine, you shall take Bay salt and water, and mixing them together make a brine so strong that it will beare an egge, then put the Wheat you are to sowe into that brine, and let it steepe therein till the next day, then draine it as clean as may be from the brine, and so sowe it, harrow it, clot it, and weede it, as was before declared, and no doubt but you shall finde a maruailous great increase thereby: for this I can assure you, both from a most certaine knowledge, and a most worthy relation, that a Gentleman buying some store of seed Wheat, and inforst to bring it home by Sea, by some casuall meanes some of the sacks at the vnlading, fell into the Sea, and

Ordering
Earth where
sands wanteth.

Sowing of
Salt.

The excellency of salt.

and were much drencht in the salt water, wherat the Gentleman being grieued (as doubting some hurt to come to the seed) yet inforst of necessity to make vse thereof, caused all the wheat which was so wet to be sown by it selfe in a particular place, and vpon the worst ground which he had, (as much despairing in the increase thereof) and it is most infallibly true, that of that wet Seed, hee receiued at least fise-fold more profit then of any other, and from thence it came, that this experiment of Brine & the sowing of salt hath taken place; from which the painfull husbandman hath found such infinite increase to arise, that the vse thereof will neuer bee layed downe in this Kingdome, neither is the thing in it selfe, without good and strong probability of much increase and strength for the bettering of all manner of earable grounds; for there is nothing which killeth weedes, quickes, and other offences of the ground so much as saltnesse: for what makes your Pigeons dung and you Pullens dung to be better for earable grounds then any other dung or manure whatsoever, but by reason of the saltnesse thereof, by which saltnesse also, you may iudge the strength and heate thereof, insomuch that the proper taste of fire, or any hot thing is euer salt; also wee say in Phylosophy, that blood which carieth the vitall heat and warmth of the body, is in taste salt, and so a nourisher, maintainer, and increaser of all the strength and vigour of the inward faculties; whereas Fleame, Choller, and Melancholly, which are the hurts and confounders of the vitall spirits; the first, is in taste sweet; the second bitter; and the last of an earthy and dry taste, full of much loathsomenesse.

Of steeping
Seed in
brine.

Now againe you shall vnderstand, that as you thus wet or steepe your Wheat seede, so you may also steepe any other

other seede, as Barley, Oates, Beanes, Pease, Lupins, Fetches, and such like; of which, your Beanes, Pease, and Lupins, you may steepe more then any of the rest, and your Oates the least. As touching Rye, it shall bee good not to steepe it at all, for it is a great enemy to all manner of wet and moisture, insomuch, that the curious Husband-man will forbear to sow it in any great shower of raine, bearing in his mind this ancient addage or saying, that *Rye will drown in the Hopper*: as on the contrarie part, Wheate would bee sown so moist, that it might sticke to the Hopper; yet notwithstanding, when you doe sow Rye in any of these In-land and cold barren Countries, where sand is not to bee gotten, you shall not by any meanes omit the sowing of your salt before, for it is nothing neere so moist as it is warme and comfortable.

CHAP. III.

Of the Ordering, Tylling, and Dressing of all rough Barren Clayes, whether simple or compound, being laden and overrunne with Gorse, Broome, and such like.

NEXT vnto these plaine barren earths, which by reason of their heights, are subiect in the Winter time to all manner of cold, frosts, stormes, tempests, blasts, and windes, which are the perfect hinderers of all increase and growth; & in the Sommer time to all hot scorchings, scaldings, and fierie reflections of the Sunne, which on the contrarie part, burneth and withereth away, that little seeming increase which appeareth aboue the earth: I will place that barren Clay, whether it bee mixt or vnmixt, which lying not so high, and subiect vnto those hurts and offences, seemeth to be a little more fruitfull, yet either
D by

by the extreme cold moisture thereof, or the stony hardnesse, and other malignant qualities, is no lesse barren then that of which I haue formerly written, which indeede is that barren and vilde soile, which will neither beare corne nor grasse, but is only ouer-run and quite couered ouer with great, thicke, and tall bushes of Gorfe or Furrer, which is a most sharpe, woody, and grosse weede; so full of pricks, that neither Horfe, Beast, Sheepe, nor Goats dare thrust their noses to the ground to gather vp that little poore grasse which groweth thereon: And al-be these Gorfe, or Furrer, are one way a little commodity to the needfull Husband-man, in being a reasonable good fuell, either for baking, brewing, or diuers other sudden and necessary vses; yet, in as much as the profit being compared with the great quantity of earth which they couer and destroy, & which with good husbandrie might be brought to great fruitfulness, is indeed no profit at all; it shall not be amisse for euery good husband-man that is pestered and ouer-laden with such ground, to seek by way of good husbandrie how to reduce and bring it to that perfection and excellencie which may bee best for his owne particular commoditie, and the generall good of the kingdome wherein he liueth.

Then is there another kinde of soile which is nothing at all differing from this, but is euery way as barren and sterile, which is that ground which is ouerrunne with broome (which is as noysome a weed as the former) and though it haue not such sharpe prickles as the other, whereby to hinder the grazing of cattell; yet doth it grow so close and thicke together, and is naturally so peysonous and offensive to grasse, that you shall seldom see any grow where this Broome prospereth; besides the bitterness thereof is so vnpleasant and distastfull

to all kind of cattell, that not any will euer crop or bite vpon the same, onely it is of some necessarie vse for the poore husbandman, in respect that it serueth him both for fuell, for thatching and the couering of his houses, (being for that purpose, of all, the longest lasting) and also for the making of Beesomes for clensing of the house and barnes, or else for sale and commoditie in the market; all which profits (as before I said) being compared with the losse of the ground, and the goodnesse that might be reaped from the same, are indeed truely no profits but hinderances.

Therefore I would wish every man that is Master of such grounds, whether they be ouerrunne with Gorse, Furres, Broome, or any such kind of grosse, woody, or substantiall weed: first, to cut vp the weed (of what sort soeuer it be) whether Gorse, Furres, or Broome) as close and neere vnto the ground as you can possibly, and then making them vp into sheafes or bigge faggots, carry them home and stacke them vp very dry, so as no raine may enter or pierce into them, for the smallest wet will rot and consume them to dirt and filthinesse; which done, you shall make Labourers with hacks, picks, and such like tooles, to stubbe vp all the rootes which you left in the ground, euen to the very bottome of the same; and these roots you shall bee very carefull to haue stubbed vp exceeding cleane, by no meanes leauing (so neere as you can) any part or parcell of the roots behinde you; then those rootes thus stubbed vp, you shall diligently gather together into little heapes as bigge as Moale-hilles, and place them vpon the grounde a pretie distance one from another, and so let them lye till the Sunne and Winde haue dried them: for it is to

Destroying
of weeds.

Markham, G.

Burning of
Baite.

be intended, that this labour must begin about the latter end of Aprill, and beginning of May.

Then so soone as you find these rootes are thorowly dried, you shall pile them handsomely together, laying them a little hollow one from another, and then with a hack cut vp some of the same earth, and therewithall couer all the rootes quite ouer, onely leauing a vent hole at the top, and on one side, and so let the hills rest two or three daies, till the earth be a little partcht and dried, then take fire and some other light drie fuell which is aptest to blaze, and with the same kindle euery hill, not leauing them till you see them perfectly on fire: which done, let them burne both day and night, till the substance being wholly consumed, the fire goe out of it owne selfe, and this in some Countries is called the *Burning of Baite*.

Breaking
of the burnt
earth.

Now as soone as the fire hath beene extinguished for two or three daies, you shall then come, and with shouels (and beetles to breake the hard burnt earth in pieces) you shall spread all the ashes cleane ouer the ground; which done, you shall with a very long Plow teare vp the earth into great and deepe furrowes, and diuide into Lands as you shall thinke meet and conuenient, laying them higher, or flatter, as you shall haue occasion, and as the ground lyeth more or lesse within the danger of water, whether it bee the ouerflowing of some neere neighbouring brookes or riuers, or else other standing water occasioned by raine and extraordinarie showers, which must be carefully lookt vnto, because all ouerflowes and inundation of water, is a mightie destroyer and consumer of grain: but these barren grounds of which I now write, are very seldome opprest with water; for most commonly they lye so high, that the continuall drynesse thereof, is a

Causes of
vnfruitful-
nesse.

strong

strong occasion of the much vnfruitfulnesse. After you haue thus burnt your baite, and plowed vp your ground, you shall then with your hackes hacke it into small pieces, in such manner as was declared in the former Chapter; then you shall (if the Sea be any thing neere you) sand it with salt sand (as before said) then lime it, and after, meanure it either with Oxe dung, Horse dung, rotten Straw, mudde of Ponds and Ditches, the spyteling of House-floores, or sweepings of Channels and Streets, or such like, or for want of all these in case you dwell neere vnto the Sea-coast (where meanure for the most part is in greatest scarcitie, and the hardest to bee come by) you shall gather from the bottome of the rockes (where the scydge of the Sea continually beateth) a certaine blacke weede, which they call Hempe-weede, hauing great broad leaues, and growing in great abundance, in thicke tufts, and hanging together like Pease-straw; and with these weeds, you shall couer your lands all ouer of a pretty good thicknesse, and then forthwith you shall plow it againe somewhat deeper, and with somewhat greater furrowes then before, raising vp the new quicke earth to intermingle and mixe with those meanures and helpes which you had formerly prepared and laid vpon the ground; then shall you againe hacke it and harrow it; then shall you take Pigeons dung, or Pul-
lens dung (that is, any kind of land fowle whatsoever, but by no meanes any water fowle) or Pigeons dung and Pul-
lens dung mixt together, and allowing to euerie acre two or three bushels thereof, which is the true quantitie of seed proportioned for the same, and this dung being broken and masht into small pieces, you shall put into your Sydlop or Hopper, and in the same manner as you sow your corne, you shall sow this dung vpon the ground, and
An excel-
lent mea-
nure.
Of Plow-
ing.
Of diuers
meanures.
Markham, G.

Mixture of
measures.

then immediatly after it, you shall sow your Wheate either steept in brine, or salt Sea-water, or vnsteept, as you shall thinke good, but in case you can neither get salt sand nor Sea-Rocke weedes, then you shall by no meanes omit the steeping of your Seede; neither shall you faile before you sow your seede, to mixe with your Pigeons and Pullens dung, a full equall part of Bay-salt well dried and broken, and so sown with the dung vpon the land, and then the seede after it; which done, you shall harrow it againe, clot it, sleight it, and smoth it, in such sort as was formerly declared in the former Chapter, for these labours haue no alterations, but must in all points be done as was before set downe.

Of weeding.

Now touching the weeding of this earth, after the Corne beginneth to grow aboue the ground, there is no feare to be had either of Thistles, Tares, Cockles, Darnell, Dockes, and such like strong weeds, which indeed are the issues of good grounds ill ordered and handled: But the weeds which you shal most feare in this place, is yong Gorse, or Furs, or else yong Broome, which are very apt to grow from the least part or parcell of roots that shal be left behind; nay, the very nature of those barren earths is such, that of its own accord it wil bring forth those weeds, the cold sharpnes of the ayre mixing with the sterilitie and roughnes of the earth, being the cause that it will giue life to no other better plants; therefore so soone as you shall behold any of them to appeare aboue the earth, though they be not halfe a finger high, you shal presently; with all diligence, pull them vp by the roots and cast them away, or lay them in heapes that they may be afterwards burnt, and the ashes sprinkled vpon the ground: and herein is to be obserued, that the yonger and the sooner that you do pull vp these weeds, the better it is, and the easilier they

they will come from the earth, and the sooner bee destroyed: for all those mixtures wherewith alreadie you haue beene taught to mixe your earth; are in themselves such naturall enemies to all these kind of barren weeds, that should you omit the manuell labour of destroying them (which no good husband willingly will do) yet in time the earth of it selfe, and the often plowing of the same would leaue no such offence of weeds or other growths which might hinder the Corne.

Now touching the best time when to pull away these weeds, though generally it must bee done as soone as they do appeare about the ground; yet it shall not bee amisse for you to deferre the worke till after a shower of raine, and then immediatly after the ground is wet (and so by that meanes more apt and willing to open and forsake the roots fastened within it) you shall with all diligence pull them out of the ground, and destroy them: neither shall you pull them out of the ground with your hands onely; for the Gorse haue exceeding sharpe pricks; so that with your naked hands you are not able to touch them, and to arme your hands, against them, with strong thicke gloues, would be too boistrous and combersome, so that sometimes you might either misse the weeds, and pull vp the Corne; or else pull vp the Corne and weeds both together; therefore to preuent all these casualties or hinderances, you shall take a paire of long small wooden Nyppers, made after the forme of this figure.

Time for weeding.



And

And with these you shall pull the weeds out of the ground, and cast them into the furrowes by the sides of the Lands, till your daies worke be finished, and then with a rake you shall rake them together, and so lay them in heapes, to drie and wither, in more conuenient places, that when time shall serue, you may burne them and vse them, as was before declared.

Gathering
of stones.

Lastly, you shall haue great respect, that if this ground be very much troubled with loose stones, as flint, pible, and such like, that then you very carefully get them gathered from the ground, both before and after you haue plowed it, and to lay them on heapes in other vacant places, where they may serue for pauings, and such like purposes when time requireth: but if the ground be ouerrunne with great or else small limestones, as for the most part these barren grounds are; then shall you with all care gather them vp, and lay them in great heapes in some corner of your field where you may make a conuenient lime-kilne, and so there burne these stones thus gathered, which will be both an infinit profit, and an infinit ease to the rest of your labours.

CHAP. IIII.

Of the Ordering, Tilling, and Dressing of all rough barren Claves, whether simple or compound, that are ouerrunne with Whinnes, and such like.

NExt vnto this barren Clay which is ouerrunne with Furres, Broome, and such like, I will place that barren and vnfertill earth, being also a Clay, whether simple or compound, which is ouerrunne onely with Whinnes, as indeed bearing little or no other burthen, or if it doe beare any other burthen, as some little short mossie grasse,

grasse, yet is that grasse so couered ouer with these sharp Whinnes, that not any beast dare put his nose to the ground, or bite vpon the same; and indeed, this kind of earth is not any whit at all lesse barren then those of which I haue already written: but rather more, in that the malignant qualities thereof are not so soone corrected, nor yet the vertues so soone restored.

Whinnes are a certaine kind of rough dry weedes which grow bushie and thicke together, very short and close vnto the ground, being of a darke browne colour, and of crooked growth, thicke and confused, and full of knots, and those knots armed with hard, long, sharpe pricks, like thornes or bryars, they haue little browne leaues which shadow the prickes, and doe winde their brāches so one into another, that they can hardly be separated, yet is their growth at any time little more then a handfull aboue the earth, only they spread exceedingly, and will runne and couer ouer a whole field, choaking vp all sorts of good plants whatsoeuer, and turning the best grasse that is to mosse, and filthinesse; wherefore if at any time you be Master of any such naughtie and barren ground, and would haue it reduced vnto goodnesse and fertillitie, you shall first take a fine thinne paring-shouell made of the best yron, and well steeled, and hardned round about the edges, according to the forme of this figure following:

What
Whinnes
are. *A.D. 1611*
Hardy weed
949

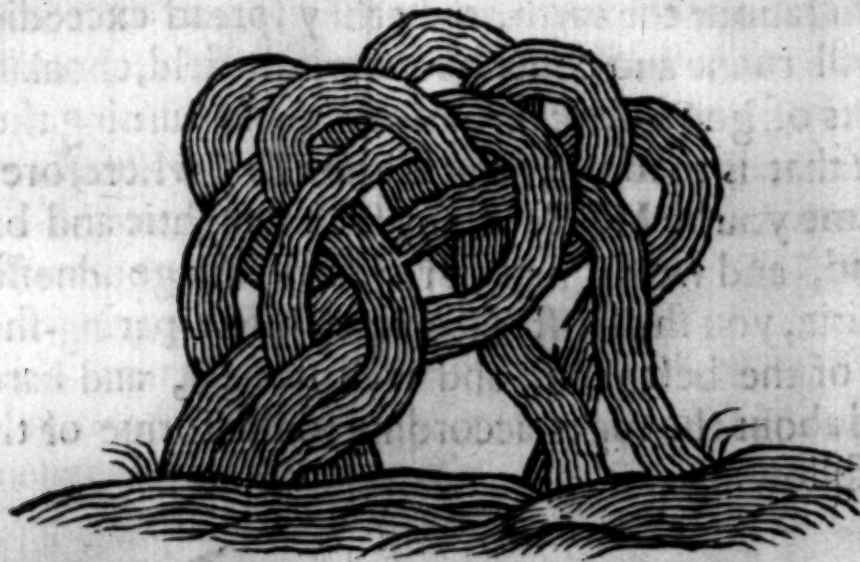
Markham, G.



E

And

And with this paring-shouell, you shall first pare vp all the vpper swarth of the ground, about two inches, or an inch and a halfe thicke at the least, and euery paring would be some three foot in length at the least, and so broad as the shouell will conueniently giue it leaue, and this swarth thus pared vp, you shall first turne the whinny or grasse side downeward, and the earth side vpward, and so let it lye two or three daies in the Sunne to dry (for this worke is intended to begin in the month of May) and when that side is well dryed, you shall turne the other side, and dry it also; then when all the swarth is dryed, you shall gather sixe or seuen pieces together, and turning the whinny or grasse side inward, and the earth side outward, you shall make round, hollow little hils thereof much what according to the fashion of this figure following:



And the inward hollownes like vnto the hollownes of an Ouen, but much lesse in compasse, which done, you shall fill the hollownes with dry chips, or else small sticks, or Furres and straw mixed together, which you shall put in at the vent-hole which shall be left on one side of the hill, and

and then kindling it with fire, you shall burne all that swarth in such sort as you burnt the roots of your Furies and Broome before; for this is also called a burning of Baite, as well as the former; for it is a most principall nourisher of the earth, and a very sudden destroyer of all malignant weeds whatsoever.

After the burning of your hills, as soone as the fire is vtterly quenched and gone out, and no heate at all left in the hills, you shall then with clotting beetles beate them all downe to dust, and then with shouels you shall spread the ashes quite ouer all the ground, as was before declared in the former Chapter: and herein is to be noted, that you must place these hills as thick and close together as by any meanes possibly you can, making your hills so much the lesse and lower, that they may stand thicker and neerer together, and so couer more ground, and thereby the heate and strength of the fire to disperse it selfe ouer all that piece of ground; for the fire burning vpon the ground, doth as much good for the enriching of the earth, and destroying of the weeds, as the ashes doth which are spread vpon the same.

Breaking of
Baies.

Now after your Baite is in this manner burned and spread, you shall then (as was before shewed) plow vp your ground in good large furrowes, then hacke it very small, sand it, lime it, and measure it; and of all measures, there is not any better for this ground then Oxe dung and ashes well mixt together; of which ashes, those of Beane-straw, Pease-straw, or any other straw, are best; those of Wood or Ferne next, those of charcoale next, & those of Seacoale or pitcoale are the worst of all: Swines dung is not much amisse for this ground; for though it be a great breeder of weeds and thyfles in good or fertile grounds, yet in this cold hard and barren earth it

Plowing.

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worketh

worketh no such effect, but is a great comforter, and warme moistner of the same.

After you haue thus made your ground; as soone as wheate seede-time commeth, which is the latter end of September, and beginning of October, you shall then with great care plow ouer your ground againe, and take great respect that you turne vp your furrowes much deeper then before, and that for two especiall causes; the first, that the new earth may the better mixe with the old earth, and those helps that are added thereunto; and secondly, that you may be surer to teare vp the roots of all the Whinnes from the very bottome of the earth, not suffering any part of them to remaine behind: and for this purpose it shall not be amisse to haue an idle Boy or two to follow you plow, and to gather away all the roots that shall be torne vp, or any way else left bare aboue ground, which roots shall bee laid on heapes in conuenient places, and then after burnt, and the ashes thereof spread vpon the ground, which will be a very great comfort vnto the seed, being a speedie helpe vnto the sprouting thereof, and a very warme comforter of the root after the stemme is spindled aboue ground, for in these cold barren earths, nothing doth so much spoile and slay the Corne, as the dead coldnesse which lyeth at the root thereof; for in many of these vnfertill places, you shall see Corne at the first sowing (whilest there is a little strength in the ground) sprout in great abundance, promising much hope of the profit; but when it should spindle and come to much better perfection, that poore strength being spent and consumed, and the cold and drynesse of the soile, hauing as it were overcome all matter of comfort, then presently you shall see the blade of the Corne turne yellow, the stemme or stalke to wither, and
either

either put forth no eare at all, or else a very poore little empty one, being laden with nothing but a most dry chaffie huske without substance. But to come againe to our purpose, after you haue thus plowed vp your ground the second time, you shall then hacke it againe, and harrow it, as was declared in the other former Chapters; then you shall take your seed-wheate which hath beene steeped either in brine or Sea water, and to euery bushell of that seede, you shall adde a bushell of Bay salt, and mixe them very well together in your Hopper or Sydlop, and so sow them together vpon the ground, obseruing to double your casts so oft, that you may not faile to cast that true quantitie of seed into the earth which otherwise you would haue done if so be there had beene no mixture at all, for to doe otherwise were to deceiue the ground, and a handfull of seed so sau'd, would be the losse of a pecke in the time of Haruest; therefore haue great respect that your ground haue his due, for it is no more cost though it be a little labour.

When your seed is sown, you shall harrow it againe the second time, clot it, smooth it, and sleight it, as was before declared in the former chapters. Harrowing.

As touching the weeding of this ground, it is the least labour of all other, for the earth being so corrected as is before shewed, it will naturally of it selfe put forth no weeds, especially if you remember to plow it deepe, and be sure to teare vp and gather away all the quicke roots, otherwise if that labour be any thing neglected, then will it put forth both Whinnes, and great store of other rough weeds, which as soone as you shall perceiue to appeare, you shall presently with your wooden Nyppers pull them vp by the roots, as was at large declared in the foregoing chapter. Weeding.

Profits.

Now for the generall profit of this ground thus made and prepared, it is the same that the two former are, that is to say, it will beare you good and sufficient Wheate, in plentiful abundance for the space of two or three yeares, then Barley a yeare after; then Oates three yeares together after the Barley; and Pease or Beanes a yeare after the Oates; then lastly, very good Meadow or Pasture, for the space of three or foure yeares after, and then you shall begin and dresse it againe, as was formerly declared.

CHAP. V.

Of the Ordering, Tilling, and Dressing of all barren Clayes, whether simple or else compound, which are over-runne with Ling, or Heath.

THere followeth now successiue, another sort of barren Earth, which indeede is much more sterile and barren then any of the other formerly written vpon, because they, out of their owne natures, do beare a certaine kind of grasse or food which will relieue ordinary, hard, store-Cattell, whether it be sheepe, goats, or yong beasts. But this earth of which I am now to intreate, beareth no grasse at all, but only a vilde, filthie, black-browne weede, which wee call Ling or Heath, the tender tops whereof Cattell and wild Deere will sometimes crop, yet it is to them but little reliefe, and onely maintaineth life and no more. Now al-be some may obiect vnto me, that this kind of soile is euer a sandy soile and no clay, as may be seene in most chases, forests, and downes: yet I answer, that al-be it hold so in generall; yet there are diuers Clayes, especially in mountainous Countries, that are pestered with these kind of weedes, as may be seene in the North
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and North-West parts of Deuonshire, in some parts of Cornwall, and in many parts both of North and South Wales; and these Clay grounds which are thus offended with these weedes of Ling or Heath, are much more barren and vnfruitfull then the sands, because of their much more coldnes; yet those clayes which are mixed with either blacke sand, dun sand, or yellow sand, and ouer-run thus with Heath or Lyng, are the most barren of all: to make any further description of this Heath or Lyng, being a thing so notoriously knowne ouer all this kingdome, I hold it meere needlesse, onely to say it is a rough browne weed, shooting out abundance of stalkes from one roote, with little darke leaues, and flowers on the toppe, of a pale reddish colour, much inclining vnto Peach colour at the first, but being full blowne, they are then a little more whitish.

You therefore that haue any such ground, and desire to bring it to fruitfulness, and the bearing of good corne and grasse in a reasonable abundance; you shal first with sythes or sharpe hooks (but old sythes are the better) cut downe all the Heath, or Lyng which groweth vpon the earth you intend to conuert to goodnes, so neere the ground as possibly you can; then when it is cut downe (which would euer be at the beginning of the Month of May) you shall let it lye vpon the ground, dayly tossing and turning it till it become very dry, then spreading it all ouer the ground, and mixing or couering it with dry straw of any kinde whatsoeuer, you shall presently set it on fire in so many seuerall corners of the field, that all the seuerall fiers in the end may meet in one point, and not leaue any part of the mowen Heath or Lyng vnburnt, or any part of the ground vnscorched; after this is done, and the ground cooled, you shall with your flat elotting beetles beate the

Destroying
of heath.

Another
burning of
Baite.

the ashes hard into the ground, then you shall take a strong plow, with a broad-winged share, and an even colture, and you shall plow vp all this ground thus burnt, in very large and deepe furrowes, by no meanes picking out any of the quicke roots which shall remeane in the furrowes so turned vp, but letting them rest in the earth still, then with your hacks, and the helpe of your yron paring shouell, you shall cut vp the furrowes, formerly turned vp, into short pieces of three foot, or three foot and a halfe long, and some lesse, as occasion shall serue; then with these pieces, you shall build little hollow hills, such as in the former Chapter you made of the vpper swarth of the ground onely; and then filling the hollownesse with dry heath, and dry straw mixt together, you shall set euery hill on fire, and so burne the very substance of the earth into ashes, which will soone be done by reason of the infinit number of roots and small strings which lye mixt in the earth, and the drynesse thereof occasioned by the former burning: And this is another kind of burning of Baite much differing from all the former, and yet to as great end and profit as any whatsoeuer, & these hills must as the former, bee placed one as neere another as is possible, so as they may spread and couer ouer the greatest part of the ground, and leauing no more then a good reasonable path to passe betweene hill and hill.

Now as soone as you haue thus burned all your Baite, and that your hills are cold, you shall then as was before shewed in the former chapters, with beetles and shouels breake downe the hills, and spread the earth and ashes ouer all the ground; which done, you shall sand it (if the situation of the ground bee answerable thereunto) and lime it in such sort as was shewed in the second chapter; then when it is lymed, and the lyme equally spread, not
more

more in one place then in another, you shall then measure it with the best measure you can provide, of which there is none better or more proper for this ground then mans ordure, and the rubbish, sweepings, parings and spyttings of houses mixt together, or for want of this (because it may not be in so great plenty as other measures) you may take either old Oxe dung, or Horse dung, or for want of them, the old rotten and mouldy staddles or bottomes of Corne-stacks, or reeds; especially Pease-stacks, or Beane-stacks, provided that it bee thorowly rotten, for the lesse rotten it is, the worse it is : Also the scowrings of common Sewers, and especially those through which much of mans vrine doth passe, is a most wonderfull and beneficial measure for these grounds, so are also the scowrings of sinkes and channels which come from Kitchens and wash-houses, where great store of Brine and salt broth is shed, and other greasie, fat and putrified substances, as also abundance of sope suddes, and buck ashes, and other sope and lee washings, then which there is no better measure that can be vsed for these kinde of grounds.

After your ground is thus perfectly made and measured, and that Wheat seede time doth draw on, which (as before was shewed) is euer at the latter end of September, you shall then plow vp your ground againe in that manner as was shewed for the former earths ; to wit, much deeper then before : for you are to vnderstand, that this ground being drest as is before declared, there will remaine nothing of the furrowes which were first plowed vp but the ashes, which being couered with sand, lime, and measure, the earth will lye plaine and leuell, so that of necessitie you must raise vp new furrowes of new earth, which being done, you shall then with your hacks, cut all the new earth into very small peeces ; mixing them well

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with

with the other mould made of sand, lyme, meaneure and ashes, then as was before said, you shall horrow it to make the mixture so much the better, and the mould so much the finer; and then if it haue beene sanded, you may sow your Seede wheate simply of it selfe, without any doubt of the plentifull increase thereof; but if it haue not beene sanded, then as in the fore-going Chapter, you shall not onely steepe your Seede in Brine (as before shewed) but also you shall mixe your Seede with Bay-salt, and so sowe it into the ground; or if at the time of sowing (after it is plowed, hackt and harrowed) you bestow or Pigeons dung, or Pullens dung, or sheepes dung vpon the Land, it will bee much better, and the Corne will giue a much greater increase. Now as soone as your Land is sowne, you shall then forthwith harrow it againe and couer the Seede very close, then you shall clot it, smooth it, and sleight it (as was before shewed.)

Of Wee-
ding.

As touching the weeding and clenfing of this earth after the Corne is sprung vp, you shall vnderstand that there is great care to bee had thereunto, for this ground is much subiect vnto weedes, and those of the worst kinde: for although for the most part it will be free from all manner of soft and tender weeds, as thistles, cockle, darnell, ketlocks, docks, rape, and such like herball stuffe, yet is it much subiect to twitch Bryars, which grow at both ends, lyng, wyld time, and such like, any of which as soone as you shall see appeare or peepe aboue the earth, you shall presently with your Nippers pull them vp by the rootes, and not suffer them in any wise to looke a handfull aboue the ground, for if you doe, their hardnesse is so great, and their rootes so large and fast fixt in the mould, that you can by no meanes pull them away without great losse and hurt to the graine, pulling vp with them all such
rootes

rootes of Corne, as shall bee fixed neere about them: for any other weake and superfluous things which shall grow from the Land, you may with ordinary weeding hookes cut them away; as for long grasse, whether it bee soft or segy, or any other such like stuffe, you shall not stirre it but let it grow, for it keepeth warme the roots of your corne, and giueth nourishment and increase thereunto: Now for the profit of this soyle thus ordered and husbanded it is equall with any of the former, and will beare Wheate very plentifully for the space of the three first yeares; good Barley the fourth yeare, with the helpe of the sheepe fold (as was before said;) and good Oates the fift, sixt, and seuenth yeares; and very good small Pease the eight yeare, (for Beanes this Soyle will very hardly beare at all) and the ninth, tenth, and eleventh yeare it will beare very good meadow (though not altogether very fine pure grasse, yet very good feeding and wholesome grasse) or so good pasture as a man can reasonably require for any holding Cattell whatsoeuer, nay, it will also indifferently well feede, and fat Cattell, though peraduenture it requireth a little longer time then other finer grounds will.

CHAP. VI.

Of the Ordering, Tyling, and Dresting of all plaine, simple barren Sands, bearing nothing but a short mosie grasse.

HAuing thus (in as large manner as I hope shall be needfull for any iudiciall or indifferent Reader) written of the Natures, Orderings, Plowings and Drestings of all manner of barren and vnfruitfull Claves, whether they bee simple of themselves, or else compounded with other earths, as sands, chalkes, grauels,

and such like; shewing by those naturall burthens which continually of their owne accords, they produce, (which indeede is the easiest and safest way of knowledge) how to amend and better them and bring them to that perfection of fruitfulness, that the best earth shall but in a very small degree exceede them, nay hardly any thing at all, except in the saving of a little charge and some labour, without which nothing is to be obtained by the Husbandman; neither is this charge or labour thus bestowed on these barren grounds to be grutcht at by any honest minde, since the worst crop of tenné or eleuen, will make good his charge and royle with a reasonable interest; so that I make account, nine or tenné yeares profits come into his Barnes without purchase, for it is to be intended that all these earths formerly spoken of, are not to be drest or to put the Husbandman to any charge more then the first yeare of tenné or eleuen, for the second yeare he shall as soone as he hath gathered his Wheate off, which will bee in August, and finish other parts of his haruest, presently put his Plow into the same Wheate-ground againe and Plow it vp, hack it, harrow it, sowe it, harrow it againe, clot it, and weede it, as in the former yeare, and so consequently of all the yeares following, whereby you perceiue that all labours and charges are saued more then once plowing and sowing.

This then considered, it necessarily now followeth that I speake of the bettering and bringing into perfection of all manner of barren Sand-grounds, being simple of themselves, without any mixture of other earths, except one and the same sand, as sand with sand, though peradventure the colours of the sands may alter; as red with white, yellow with blacke, &c. which in as much as the whole substance is sand without any contrary mixture, therefore

therefore it may well bee called simple and not compound: and of these sands, I purpose to intreate, as formerly I did of the Clayes; that is to say, by their outward faces and Characters, which are these burthens and increase which of their owne proper natures without any help or compulsion they produce and bring forth into the world. And first of that naughtie cold and barren sand, which lying vpon high, stony and mountainous Rocky places, or else vpon lower cold bleake Plaines, subiect to the North and North-East windes and tempests, or bordering vpon the Seas, doth not bring forth any thing but a short mossie grasse which the Sunne maketh bitter, and the cold dewes fullsome and vsauory in tast. If any man then bee Master of such vnprofitable and vnfruitfull earth, and desire to haue it brought to goodnesse and perfection, hee shall, First, at the beginning of the Spring, as about midde Aprill or earliyer, with a strong Plow answerable to the soyle, yet somewhat lesse both in timbers and yrons then that wherewith you plow your Clay grounds: you shall plow so much of that earth vp as you may conueniently compasse to sowe and dresse exactly and perfectly; for to vndertake more, were to make all vnprofitable, and to cast away much labour and charge without any profit. this ground you shall plow of an indifferent depth, though not so deepe as the Clayes, and you shall lay the furrowes though flat, yet close one to another, without leauing any balke betweene, but plowing all very cleane; yet not so very cleane and close together, that you may lay the Greene swarth to the new plowed or quick earth; but rather turne one swarth against another, so as the furrowes may lye, and no more but touch the edges one of another: This when you haue done, you shall then with your hakes cut and breake all

Plowing.

the earth so turned vp into very small peices, and not only the earth so turned vp, but also all other Greene swarth which was left vnplowed; prouided, that before this labour of hacking, you let the ground lye certaine daies in the forrowes, that one swarth heating and scalding the other, they may both equally rot and grow mellow together, which once perceiued by the blacknesse thereof, you may then at your pleasure hack it and cut it as is before declared.

Obiection.

Now some may in this place obiect vnto mee, that this labour of hacking should bee needlesse, in as much as all sand grounds whatsoeuer are out of their owne natures so light, loose, and willing to disseuer, that this toyle might very well and to good purpose bee sau'd.

Answer.

To this I answer, that true it is, most sands in their owne natures are loose, and light, and willing to disseuer into fine mold without any extremity, especially rich and fruitfull sands, whose predominant qualitie of warmth giueth nourishment and increase; but these barren and cold sands, in which is a certaine flegmatique toughnesse and most vnwholesome driness, are of a cleane contrary nature, and through the stony hardnesse thereof, they are as vnapt to breake and disseuer as any Clay whatsoeuer: besides, the swarth being of a rough mossie substance (which euer carrieth a hard strong roote answerable with the cold in which it is ingendred) doth so constantly binde, fetter, and hold the mold together, that it is impossible for any harrow to breake it in peeces, or to gather from it so much mould as may serue to couer the Corne and giue it roote when it is sowne into the same; and therefore this work of hacking is necessary.

When therefore you haue thus hackt your Land,

and

and distributed the mold into many small pieces, you shall then with all expedition marle it; which forasmuch as it is no generall or common practice in euery part of this Kingdome, I will first tell you what Marle is, and then how to find it, digge it, and vse it for your best behoofe.

Marle, you shall then vnderstand is (according to the definition of Master *Bernard Pallisy*) a naturall and yet an excellent soyle, being an enemy to all weedes that spring vp of themselues, and giuing a generatiue vertue to all seeds that are sowne vpon the ground; or (for the plaine husbandmans vnderstanding) it is a certaine rich, stiffe and tough Clay, of a glewie substance and not fat or Oylie as some suppose. This Marle is in quality cold and drie and not hot (as some would haue it, and it was earth before it came to be Marle, and being made Marle yet it is but a Clay ground; all Chalk whatsoeuer was Marle before it was Chalk, and all manner of Stones which are subiect vnto Calcynation or burning, as Lyme-stone; flint, or the like, were first Marle before they were stones, and onely hardned by accident and so not possible to be dissolued but by fire: as for Marle it selfe when it is a little hardned it is onely dissolued by frosts and nothing else, and thence is the cause that Marle euer worketh better effects the second yeare then the first; This Marle hath bin made so precious by some writers that it hath beene accounted a fift element, but of this curiosity I will not now dispute.

Touching the complections or colours of Marle, there is some difference, for though all conclude there are foure seuerall colours in Marle, yet one saith, there is a white, a Gray or Russet, a Black and Yellow; another saith, there is a Gray, a Blew, a Yellow and a Red; and a third saith, there is a Red and white mixt like vnto porpherie,

pheric, and all these may well be reconciled, and the colours may alter according to the Climat and strength of the Sunne: So that by these Characters the colour, the toughnesse, and the loosenesse when it is dried, any man of iudgement may easily know Marle from any other earth whatsoever. This Marle is so rich in it selfe, and so excellent for continuance, that it will maintaine and enrich barren grounds, the worst for ten yeares, some for a dozen, and some for thirty yeares; yet there is a great respect to bee had in laying of this Marle vpon the ground, that is to say, that you lay it neither too thick nor too thinne, that you giue it neither too much, nor too little, for any of these extremities are hurtfull; and therefore hold a meane, and see there bee an indifferent mixture betweene the Marle and the earth, on which it is laid.

For the generall finding out of this Marle, there is no better way for readinesse and the sauing of charges, then by a great Augure or wimble of Iron made to receiue many bits one longer then another, and so wresting one after another into the ground to draw out the earth till you finde you are come to the Marle, which perceived and an assay taken, you may then digge at your pleasure.

Now for the places most likely where to finde this Marle, it is commonly found in the lowest parts of high Countries, neere Lakes and small Brookes, and in the high parts of lowe Countries, vpon the knols of small hils, or within the Clifts of high Mountainous banks, which bound greater Rivers in: to conclude, you shall seldom finde any of these barren sands, but they are either verded about with Marle grounds, or if you will bestow the labour to digge below the sand, you shall not faile to find either Marle or some quarrie of stone, or both; for in some places Marle lyeth very deepe, in other some places

places within a spades graft of the vpper swarth of the earth: Therefore it shall be good for you to make prooffe of all the most likely parts of your ground to find out this Marle; and as soone as you haue found it out, you shall with Mattocks and Spades digge it vp and carry it to your land, there laying it in bigge round heapes, and setting them within a yard or two one of another; thus when you haue filled ouer all your ground (which would be done with as great speed as might be, for the ancient custome of this Kingdome was, when any man went about to Marle his ground, all his Tenants, Neighbours and friends would come and helpe him to hasten on the worke) you shall then spread all those heapes, and mixing the Clay well with the Sand, you shall lay all smooth and leuell together; and herein is to be obserued, that if the land you thus marle shall lye against the side of any great Hill or Mountaine, whereby there will bee much descent in the ground, then you shall (by all meanes lay double as much marle, sand, or other compasse on the top of the hill as on the bottome, because the raine and showers which shall fall will euer wash the fatnesse of the earth downe to the lowest parts thereof.

Now in the laying of your Marle, you are to hold this obseruation, that if you lay it on hard and binding grounds, then you are to lay it in the beginning of Winter, but if on grounds of contrary nature, then it must be layd in the Spring or Sommer. Againe, you shall obserue, that if you cannot get any perfect and rich Marle, if then you can get of that earth which is called Fullers earth, and where the one is not, commonly euer the other is, then may you vse it in the same manner as you should do Marle, and it is found to be very neere as profitable.

Additions.
Obseruations.

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Of Chalke,
and the vic.

When your ground is thus marled (if you be neere to the sea-side) you shall then also sand it with salt sea-sand, in such sort as was formerly declared, onely you may forbear to lay altogether so much vpon this sand ground as you did on the Clay ground, because an halfe part is fully sufficient. If you cannot come by this salt sand, then in stead thereof, you shall take chalke, if any bee to bee had neere you, and that you may lay in more plentifull manner then the sand; and al-be it is said, that chalke is a wearer out of the ground, and maketh a rich father, yet a poore sonne, in this soile it doth not so hold, for as it fretteth and wasteth away the goodnesse that is in Clay grounds, so it comforteth and much strengtheneth these sand earths: and this chalk you shall lay in the same manner as you did your marle, and in the same manner spread it and leuell it; which done, you shall then lime it as was before shewed in the Clay grounds, yet not so abundantly, because also a halfe part will be sufficient; after your liming, you shall then measure it with the best measure that you haue, whether it be dung of Cattell, Horse, Sheepe, Goats, straw, or other rubbish; and that being done, and seed-time drawing on, you shall then plow vp your ground againe, mixing the new quick earth and the former soyles so wel together, that there may be little distinguishment betweene them; then you shall hacke it againe, then harrow it, and lastly sow it with good, sound, and perfect seed, and of seeds though Wheate will very well grow vpon this earth, yet Rye is the more naturall and certaine in the increase: yet according to the strength of the ground, you may vse your discretion, obseruing that if you sow Wheate, then to steepe it before in brine or salt-sea water, as was before described; but if you sow Rye, then you shall sow it simply without any helpe, except

cept it be Pigeons dung, or Bay-salt simple of it selfe, in such manner as hath beene before declared; either sowing the salt with the corne, or before the corne, as shall seeme best in your owne discretion.

After your seed is sown, you shall then harrow it againe, clot it, smooth it, and sleight it as before shewed in the second chapter, which done (after the corne is shot about the earth) you shall then looke to the weeding of it, being somewhat a little too much subiect to certaine particular weedes, as are Hare-bottles, wyld Chesse-bolles, Gypsy flowers, and such like, any of which, when you see them spring vp, you shall immediatly cut them away close by the roots, as for tearing their roots out of the ground with your Nyppers, it is not much materiall, for the cutting of them is sufficient, and they will hardly euer againe grow or do you hinderance, many other weeds there may grow amongst these which are also to be cut away, but these are the principall, and of most note; wherefore as soone as you haue clensted your lands of these and the rest, you shall then referre the further increase of your profit vnto Gods prouidence.

Lastly, you shall vnderstand that this ground being thus plowed, drest, and ordered, will without any more dressing, but once plowing and sowing, euery yeare beare you good Wheate or good Rye three yeares together; then good Barley the fourth yeare; good Oates the fift, sixt, and senenth yeare; excellent good Lupins the eight yeare, and very good Meadow or Pasture three or foure yeares after, and then it shall be necessarie to dresse it againe in such manner as was before described.

The Profits

CHAP. VII.

Of the Plowing, Tilling, Ordering and Inriching of all barren Sands which are laden and ouer-runne with Braken, Ferne, or Heath.

NEXT vnto this plain, cold, barren Sand, which beareth no other burthen but a short mossie grasse; I will place that Sand which is laden and ouerrunne with Braken, Ferne, or Heath, as being by many degrees more barren then the former, both in respect that it is more loose, and lesse substantiall, as also in that it is more dry and harsh, and altogether without nutriment, more then an extreame sterile coldnesse, as appeareth by the burthen it bringeth forth, which is Braken or Ferne, a hard, rough, tough weed, good for nothing but to burne, or else to lyster store-beasts with, for the breeding of meaneure; or if you strow it in the high-ways where many trauelliers passe, it will also there turne to good reasonable compasse.

Of destroy-
ing Braken.

Of this kind of ground if you be Master, and would reduce it vnto fertilitie and goodnesse, you shal first, whether the Braken be tall and high (as I haue seene some as high as a man on horse-backe) or short and low (as indeed most commonly these barren earths are, for tall Ferne or Braken shewes some strength in the ground) you shall with fythes first mowe it downe in the month of May, then wither and dry it vpon the ground, and after spread it as thinn as you can ouer all the earth you intend to plow; which done, you shall bring your plow and begin to plow the ground after this order: first, you shall turne vp your furrow, and lay it flat to the ground, greene-swarth against greene-swarth, then looke how broad your furrow is so turned vp, or the ground it couereth, and

and iust so much ground you shall leaue vnplowed betweene furrow and furrow, so that your land may lye a furrow and a greene balke, a furrow and a greene balke, till you haue gone ouer all the ground, then shall you take a paring-shouell of yron, and pare vp the greene swarth of all the balkes betweene the furrowes, at least two ynches thicke, and into pieces of two or three foot long, and with these pieces of earth, and the dry Ferne which is pared vp with them, you shall make little round hollow Baite hills, as in the third and fourth Chapter, and these hills shall be set thicke and close ouer all the ground, and so set on fire and burnt; then when the fire is extinct, and the hills cold, you shall first with your hacks cut in pieces all the furrowes that were formerly turned vp, and then breake downe the burnt hills, and mixe the ashes and earth with the other mould very well together; which done, you shall then with all speed marle this earth as sufficiently as possibly may be, not scanting it of marle, but bestowing it very plentifully vpon the same; which done, you shall then plow it ouer againe, and plowing it exceedingly well, not leauing any ground whatsoever vntorne vp with the plow; for you shall vnderstand that the reason of leauing the former balkes, was that at this second plowing after the marle was spread vpon the ground, the new, quicke, and vnstirred fresh earth might as well be stirred vp to mixe with the marle, as the other dead earth and ashes formerly receiued, whereby a fresh comfort should be brought to the ground, and an equall mixture without too much drynesse, and this second Ardor or plowing would begin about the latter end of Iune.

Of Marle.

After your ground hath beene thus marked, and the second time plowed, you shall then sand it with salt Sea-sanding and liming. sand, lime it, and measure it, as was declared in the fore-

going Chapter: and of all measures for this soyle, there is not any so exceeding good as sheepes measure, which although of the Husbandman it bee esteemed a measure but of one yeare, yet by experience in this ground it hapneth otherwise, and is as durable, and as long lasting a compasse as any that can bee vsed, and besides it is a great destroyer of thistles, to which this ground is very much subiect, because vpon the alteration of the ground the Ferne is also naturally apt to alter vnto thistle as we dayly see.

Plowing
and sowing.

When your ground is thus drest and well ordered, and the Seede-time commeth on, you shall then plow it againe, in such manner as you did the second time, that is to say, very deepe, cleane, and after the manner of good Husbandry, without any rest balkes or other disorders: then shall you backe it very well, then harrow it, and then sow it; but by mine aduice, in any case, I would not haue you to bestow any Wheate vpon this soyle (except it bee two or three bushels on the best part thereof for experience sake, or prouision for your household) for it is a great enemy vnto Wheate, and more then the marle hath no nourishment in it for the same, because all that commeth from the salt sand, lime, and measure is little enough to take away the naturall sterilitie of the earth it selfe, and giue it strength to beare Rye, which it will doe very plentifully; and therefore I would wish you for the first three yeares onely, to sow the best Rye you can get into this ground; the fourth yeare to sow Barley; the fift, sixt, and seuenth, Oates; and of Oates, the bigge blacke Oate is the best for this ground, maketh the best and kindlyest Oat-malt, and feedeth Horse or Cattell the soundest; as also it is of the hardest constitution, and endureth either cold

or

or drynesse much better then either the white Oate, the cut Oate, or any Oate whatsoever; the eight yeare, you shall onely sow Lupins or Fetches; and three yeares after, you shall let it lye for grasse, and then dresse it againe as before said; for it is to bee vnderstood, that in all the following yeares (after the first yeare) you shall bestow no labour vpon this ground more then plowing, sowing, hacking and harrowing at Seed-time only.

But to proceede to the orderly labour of this ground, after you haue sowed your Rye, you shall then harrow it againe, clot it, smooth it, and sleight it, as was before shewed in the second Chapter of this Booke. And although a man would imagine that the sandy loosenesse of this soyle would not neede much clotting or sleighting of the Earth, yet by reason of the mixture thereof with the Marle and meaneure, it will so hold and cleave together, that it will aske good strong labour to loosen it and lay it so hollow and smooth as in right it should be.

Labours after sowing.

Touching the weedes which are most subiect to this soyle, they are Thystles, and yong Brakes or Fernes which will grow vp within the Corne, which before they rise so high as the Corne, and even as it were at the first appearing, you must with your wooden Nypers pull vp by the roots, and after take vp and lay in some conuenient place where they may wither and rot, and so turne to good meaneure.

Weeding.

any part of them behind in the ground, and you shall not be troubled with them, as you shall be in the mending of the hedges, or such like, as you shall have occasion; this done, you shall take a part of strong rows, and with them you shall harrow over all the earth, tearing vp all the Twitch, Bryans, and rough grasses by the roots, that not any part but the bare earth may be seen, and when your harrows are cloyed, you shall

Destroying of Twitch and Bryans

CHAP.

Markham, G.

CHAP. VIII.

Of the Plowing, Tilling, ordering, and enriching of all barren Sands, which are laden and ouer-runne with Twitch, or wyld Bryars.



Destroying
of Twitch
and Bryar.

Having written sufficiently of this hard and barren, wast, wyld, sandy ground, which is ouer-run with Braken, Ferne, Heath, and such like: I will now proceed, and vnto it ioyne another land which is much more barren, and that is the sand that bringeth forth nothing but wyld Twitch, Bryars, Thorn-bush, and such like vndergrowth of yong misliking wood, which neuer would rise or come to profit, the bitter cold drynesse of the earth wherein it groweth, and the sharpe stormes to which the clime is continually subiect both day and night, blasting it in such manner that nothing appeareth but starued, withered, and vterly vnprofitable burthens, good for nothing but the fire, and that in a very simple sort. Such ground if you be master of, and would reduce it to profit and fruitfulnessse, you shall first with hookes or axes cut vp the vpper growth thereof, that is, the bushes, yong trees, and such like, then you shall also stubbe vp the roots, not leauing any part of them behind in the earth, carrying away both home to your house to be imployed either for fuell, or the mending of the hedges, or such like, as you shall haue occasion; this done, you shall take a paire of strong yron harrowes, and with them you shall harrow ouer all the earth, tearing vp all the Twitch, Bryars, and rough grasse so by the roots, that not any part but the bare earth may bee scene, and when your harrowes are cloyed, you shall

shall vnlade them in seuerall places of the ground, laying all such rubbish of weedes and other stufte, which the harrowes shall gather vp, in a little round hill, close vp together that they may sweate, wither and dry; then spreading them abroad and mixing them well with dry straw, burne them all ouer the ground, leauing no part of the weedes or grasse vncōsumed, then without beating in of the ashes, you shall presently plow the ground all ouer very cleane as may be, laying the forrowes as close as you can one to another, and leauing no earth vntoucht or vntorne vp with the plow, which done, you shall immediately hack it into small peeces, and as you hack it, you shall haue idle Boyes to goe by the Hackers, to gather away all the roots which they shall loosen or breake from the mould, and laying them on heapes in the worst part of the ground, they shall there burne them, and spread the ashes thereon; after your ground is thus harrowed, plowed, and hackt, you shall then mucke it, as was formerly shewed in the sixt Chapter, then shall you sand it, lime it, and measure it as before said.

Now of measures, which are most proper for this soyle, you shall vnderstand that either Oxe, or Horse measure, rotten straw, or the scowring of Yards is very good, provided that with any of these measures, or all these measures, you mixe the broad-leaued weedes, and other greene-weeds which grow in Ditches, Brookes, Ponds or Lakes, vnder Willow tree, which with an Iron Rake, Drag, or such like instrument, you may easily draw vpon the banke, and so carry it to your land, and there mingle it with the other measures, and so let it rot in the ground, this measure thus mixed is of all other most excellent for this soyle, both by the experience of the Ancients who haue left it vnto memory, as also by daily practice now

Measures.

Harrowing
and other
labours.

used in sundry parts of this Kingdome, aswell because of the temperate coolnes thereof, which in a kindly manner asswageth the lime and sand, as also through the moy-
sture which distilling through these warme Soiles doth quicken the cold starued earth, and giueth a wonderfull increase to the seed that shall be throwne into the same.

After your grownd it thus sufficiently drest with these soiles and manures, you shall then plow it againe the second time, which would be after *Michaelmas*; after the plowing you shall then hack it againe, and be sure to mixe the earth and the manures very well together, then you shall breake it in gentle manner with your Harrowes, and then sow it; which done, you shall harrow it againe, but then you shall harrow it much more painefully, and not leaue any clots or hard earth vnbroken that the Harrow can pull in pieces: as touching the seede which is fittest for this earth, it is the same that is spoken of in the next foregoing Chapter: as namely, the best Rye or the best Masline, which is Rye and Wheate equally mixt together, or if there be two parts Rye, and but one Wheate, the seede will bee so much the more certaine and sure holding, and this seede you may sow on this grownd three yeares together, then Barley, then Oates, and so forth, as is formerly writ of the grounds foregoing. After your ground is sowne and harrowed, you shall then clotte it, sleight it, and smooth it as you did the other grounds before, and then lastly with your backe Harrowes, that is, with a paire of harrowes, the teeth turned vpward from the ground, and the backe of the harrowe next vnto the ground, you shall runne ouer all the ground and gather from the same all the loose Grasse, Twich, or other weedes that shall any wayes bee raised vp, and the same so gathered, you shall lay at the lands end in
H
heapes,

heapes, either to rot for manure, or else at the time of the the yeare to be burnt for ashes, and sprinkled on the earth the next seed time.

Lastly touching the weeding of this soyle, you shall vnderstand the weedes which are most incident thereunto, are all the same you first went about to destroy : as namely, Twitch, rough wylde Grasse, and yong woody vndergrowth, besides Thistles, Hare-bottles, and Gipsie flowers; therefore you shall haue a great care at the first appearance of the Corne, to see what weedes arise with it, (for these weedes are euer fully as hasty as the Corne) and as soone as you see them appeare, both your selfe and your people with your hands shall pull them vp by the rootes, and so weede your land as you would weede a garden, or Woad ground. Now if at this first weeding (which will bee at the latter Spring commonly called *Michaelmas*, or the Winter Spring) you happen to omit and let some weedes passe your hands vnpulled vp (which very well may chance in so great a worke) you shall then the Sommer Spring next following (seeing them as hie or peraduenture hie then the Corne) with your wooden nippers pull them vp by the roots from the ground, and so cast them away : As touching the cutting them vp close by the ground with ordinary weedhookes, I do in no sort allow it, for these kind of weeds are so apt to grow, and also so swift in growth, that if you cut them neuer so close in the Spring, yet they will againe ouermount the Corne before haruest, and by reason of their greatnes, roughnes, and much hardnes choake & slay much Corne that shall grow about them, and therefore by all meanes you shall pull these weeds vp by the roots whilst they are tender, (if possibly you can,) or otherwise in their stronger growth, sith their sufferance breedeth great losse and destruction.

Weeding.

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CHAP.

Markham, G.

CHAP. IX.

Of the Plowing, Tilling, Ordering and Inriching of all barren Sands which are over-runne with mores or morish stinking long Grasse.

VNto these fore-going barren Sands, of which I haue already written, I will lastly ioyn this last barren Sand, being of all earths, whether Clay or Sand the most barrenest, and that is that filthy, blacke, morish Sand which beareth nothing but a stinking, putrified Grasse or Mosse, or Mosse and Grasse mixed together, to which not any Beast or Cattell, how course or hardly bred fouler, will at any time lay their mouthes: and this kinde of ground also is very much subiect to marishes and quagmires, of which that which is couered with Mosse, or Grasse, is the worst, and that which is tufted about with rushes, the best and soonest reduced vnto goodnesse; in briebe, all these kinds of grounds generally are extremely moyst and cold, the superabundance whereof is the occasion of the infinite sterility and barrenesse of the same.

And therefore hee that is master of such vnprofitable Earth, and would haue it brought to some profit or goodnesse, shall first consider the situation of the ground, as whether it lye high or low, for some of these marish grownds lie low in the Vallies, some on the sides of Hilles, and some on the tops of Mountaines; then whether the much moystnesse thereof bee fedde by Riuer, Lake or Spring, whose veines not hauing currant passage through or vpon the earth, spreads lookingly ouer all the face thereof, and so rotting the mould with too much wette, makes it not onely vnpassable,

sable, but also vtterly vnprofitable for any good burthen.

Now if you finde that this marish Earth lie in the Ground for bottome of low valles, as it were girdled about with hilles Fish ponds. or higher grounds, so that besides the feeding of certaine Springs, Lakes, or Riuers, euery shower of raine or falling of water from higher grounds bringeth to these an extraordinary moysture to maintaine the rottenesse, in this case this ground is pasture for grasse or Corne, and would onely bee conuerted and made into a fish-pond for the breeding and feeding of Fish, being a thing no lesse profitable to the Husband-man for keeping his house, and furnishing the market then the best corne-land hee hath; and therefore when hee maketh any such pond hee shall first rayse vp the head thereof in the narrowest part of the ground, and this head by driuing in of stakes and piles of tough and hard wood as Elme, Oake, and such like, and by ramming in of the Earth hard betweene them, and sodding the same so fast that the mould can by no meanes bee worne downe or vndermined with the water, he shall bring it to as firme Earth as is possible, and in the midst of this head hee shall place a sluice of Flood gate made of sound and cleane Oake Timber and planks, through which at any time to draine the Pond when occasion shall serue, and this done, you shall digge the Ponde of such depth as the Earth conveniently will beare, and casting the Earth vpon either side you shall make the bankes as large and strong as the ground requireth, then if any Spring which did before feede the Earth be left out of the compasse of the Ponde (because it lieth too high to bee brought in) then shall you by drawing gutters or drains from the Spring downe to the Pond, bring all the water

of the Springs into the Pond, and so continually feede it with fresh and sweet water. Then storing it with Fish of best esteeme, as *Carpe, Tench, Breame, Pearch*, and such like, and keeping it from weeds, filth and Vermine, there is no doubt of the daily profit.

But if this marish and low Ground though it lie low and haue many Springs falling vpon it yet it lyeth not so extreame lowe but that there is some Riuer or dry Ditches bordering vpon it, which lie in a little lower dissent, so that except in case of inundation the Riuer and Ditches are free from the moysture of this Ground, but where there is any ouer-flowing of waters there this marish Ground must needes bee drowned, in this case this ground can hardly bee made for Corne, because euery ouerflow putteth the Graine in danger, yet may it bee well conuerted to excellent pasture or medowe, by finding out the heads of the Springs, and by opening and cleansing them, and then drawing from those cleansed heads, narrow draines or torrowes through which the waters may passe to the neighbour ditches, and so be conueied downe to the lower Riuers; leauing all the rest of the ground dry, and suffering no moistures to passe, but what goeth through these small deepe channels, then as soone as Sommer commeth, and the ground begins to harden, if you see any of the water stand in any part of the ground, you shall forthwith mend the draine, and helpe the water to passe away, which done (as the ground hardeneth) you shall with hacks and spades lay the swarth smooth and plaine, and as early in the yeare as you can conueniently, you shall sow vpon the ground good store of hay seedes, and if also you doe measure it with the rotten staddels or bottomes of haystackes, it will be much the better, and this staddell you shall not spread very thicke,
but

but rather of a reasonable thinnesse, that it may the sooner rot and consume vpon the same.

But if this marish and filthy ground doe not lie so low as these low valleyes, but rather against the tops of hills, you shall then first open the heads of all the Springs you can find, and by seuerall draines or sluices, draw all the water into one draine, and so carry it away into some neighbouring ditch & valley; and these draines you shall make of a good depth, as at least two foote, or two foote and a halfe, or more, if need require, and then crosse-wise, euery way over-thwart the ground, you shall draw more shallow furrowes, all which shall fall into the former deepe draines, and so make the ground as constant and firme as may bee: then hauing an intent to imploy it for Corne, you shall bring your plow into the ground, being a very strong one, and not much differing in Timberworke or Irons from that which turneth vp the Clay grounds, and laying before the plow long waddes or roulles of the straw of Lupynes, Pease, or else Fetches, (but Lupynes is the best) you shall turne the furrowes of earth with the plow vpon the waddes, and so couer or bury them in the mould, and thus doe vnto euery furrow, or at least vnto most of the furrowes you turne vp, and so let it lie a little time to rotte, as by the space of a fortnight or three weekes, in which space, if the ground receiue not raine and moysture enough to rotte the straw thus formerly buried, you shall then by stopping the draynes, and making the Springs overflow, gently wash the ground all ouer and no more, and then presently draine it againe; which done, as soone as the earth is dry, you shall hacke it and breake it into small peeces, then you shall also Sande it, Lyme it and manure it.

Draining of wet grounds

And

And lastly, you shall marle it, but if no salt sand bee to be had, then in stead of it, you shall chalke it, yet of all the rest you shall take the least part of chalke.

This done, about the latter end of *Iuly* you shall plow vp the ground againe with somewhat a better and deeper styth then you did before, that if any of the straw bee vnrotted or vnconsumed, it may againe bee raised vp with the new moist earth, and so made to waste more speedily, and if at this second carrying you doe see any great hard clots to rise, then with your hacks you shall breake those hard clots in peeces, laying the land cleane without clots, weedes, or any other anoyance, and so let it rest till *October*, at which time you shall plow it ouer againe, hacke it, harrow it, and then sow it with the best seed-wheate; for this soile thus drest and meanured, albeit it be of all other the most barren, yet by reason of this moysture which at pleasure may be put to it, or taken from it, and by the mixture of these comfortable soyles and compasses, it is made as good and fruitfull as any earth whatsoeuer, and will beare Wheat abundantly the space of three yeares together; then good Barley the fourth yeare with a little helpe of a sheepefolde, or sheepes measure; then Rye the fift yeare; Oates the sixt, the seuenth and eight yeares; small Pease, the ninth yeare; good medow or pasture three yeares following, and then to be new drest againe, as before said.

Harrowing.

Now as soone as your seed-wheat is sowne, you shall then harrow the ground againe, and be sure to couer the wheate both deepe and close, as for the clots which shall arise from this soyle, it shall not matter whether you breake them, or no, for by reason of their moysture, they will be plyant and easie for the wheate to passe thorow, so that you shall not care how rough your land lie, so it lie cleane,

cleane, and the Corne well couered, but for all other seeds, you shall breake the clots to dust, and lay the land as smooth as may be.

Now for the weeding of this soyle, you will not bee much troubled therewith, because this ground naturally of it owne accord, putteth forth no weeds, more then these which are ingendred by the new-made fruitfulnessse thereof, and those weeds for the most part are a kind of small sedge, or hollow reede; any of which if you see appeare, or with them any other kind of weed, you shall at the first appearance, either pull them vp by the rootes with your wooden nyppers, or else cut them close by the ground with your weed-hookes.

Weeding.

CHAP. X.

A generall way for the enriching of any poore arable ground, either Clay or Sand, with lesse charge then formerly.



IF the former demonstrations and instructions which I haue shewed thee, appeare either too difficult, or too costly (for now I speake to the plaine, simple, poore husbandman) and yet thou art master of none but barren earth, then thou shalt by thine owne industrie, or the industrie of thy children, seruants, and such like, or by contracting with Taylers, Botchers, or any poore people that will deserue a pennie, gather vp, get, or buy all the ragges, shreds, and base pieces of woollen cloth whatsoeuer, which are only cast out, and fit for nothing but the dung-hill, and of these if thou canst compasse but a sacke full, or a sacke full and an halfe, it is sufficient for the dressing

*Additions,
the whole
Chapter.*

*Raggs of
woollen
cloth.*

of an acre of arable ground. These shreds and ragges (torne small) thou shalt thinly spread ouer the land before fallowing time, then comming to fallow, plow them all into the ground, and be sure to couer them, then giue your land the rest of its ardors, as stirring, foyling, ridging, &c. in their due seasons, and after an husbandly manner: then when you come to sow it, you shall take

Steeping of the slymie thick water which commeth from dung-hils;
Seed-corne. or for want thereof, water in which Cow-dung hath beene steeped, and therein you shall steepe your seed-corne, that is to say, if it be Barley, you shall steepe it for the space of thirtie and sixe houres, or thereabouts; if it be Wheate, but eightene houres; and if it be Pease, but twelue houres; for Rye or Oates, not at all: and the Seede thus steeped, you shall sow it according to good husbandrie, and there is no doubt of wonderfull increase.

Or any
Pulse.

There be others which take the Seed-corne, and steeping it in good store of Cow-dung and water, stirre all together for an houre in the morning, and an houre at night, and then being settled, drayne the water from the Seede and the dung, and the next morning sow the corne and the dung both together on the land, being sure not to scant the land of seed, and no doubt the increase will be wonderfull. Now if this cannot be conueniently done, or that you want dung, if then you take ordinarie water, and therein steepe your Seed, it is good also, and especially for Barley, as is approued by dayly experience. But now me thinkes I heare the poore man say, that here is but one acre drest, and that is a small proportion: to this I answere, If thou beest able but to dresse one acre with these woollen ragges, thou shalt then search amongst the Horners, Tanners, Lanthorne makers, and such like, and get all the wast shauings of horne which thou canst possibly.

Shauings of
horne.

sibly compasse, and as before of the ragges, so of these a sacke and an halfe, or two sackes will dresse an acre: these shauings (which are indeed good for no other vse) you shall scatter vpon the land as you did the ragges, then plow them in after the same maner, so order the ground, so sow, and in the same manner steepe the Seed, and questionlesse the increase will bee wonderfull great: these meanures wil last five yeares without any renewing. Now if of these you cannot get sufficient to trimme all your ground, you shall then deale with Butchers, Sowse women, Slaughter men, Scullions, and the like; and from these you shall get all the hooves you can, either of Oxe, Cow, Bull, Calfe, Sheepe, Lambes, Deere, Goats, or any thing that cheweth the cud, and which indeed, if not for this vse, are otherwise vtterly cast away to the dunghill, and despised; and these hooves you shall scatter thicke vpon your land at fallowing time, then plow them in as afore said, and doe in all points as with the other meanures alreadie recited, and so steepe your Seed, and there cannot bee a greater enricher of arable ground whatsoever.

Hooves of cattell.

Now if all these will not yet compasse you land, you shall then see what sope ashes you can get or buy, for of all meanures there is none more excellent, for besides it giueth an exceeding strength and farnesse to the land, it also killeth all manner of weedes, great and small, as Broome, Gorse, Whynnes, and the like, and it killeth all manner of wormes, and venomous creeping things, it is excellent for Woad, and the ground renewed yearly therewith, may bee sown continually: these sope ashes must bee laid on the land after the fallowing, and then stirrd in, two load thereof will serue to dresse an acre: when it is fit for Seed, the Seed must be steeped as afore said,

Of Woad.

The enrich-
ing of ordi-
narie mea-
nure.

The haire
of beasts
hides.

Of Braken.

To rot dung
quickly.

and then sown, and the increase will quit the charge manifold. These Sope ashes are also excellent good for Hempe and Flaxe, being thinly sowne vpon the land, after it is plowed, & immediatly before the Seed be sowne:

But if you haue more land to dresse, then you must make vse of your owne ordinarie measure, as is Oxe dung, Horse dung, and the like, which that you may make richer and stronger then otherwise of it owne nature it would be, you shall cause continually to be throwne vpon it all your powdred beefe broth, and all other salt brothes or brines which shall grow or breed in your house, also all maner of Soape suddes, or other suddes, and washings which shall proceede from the launderie, and this will so strengthen and enrich your measure that every load shall be worth five of that which wanteth this helpe. There be diuers other measures which doe wonderfully enrich and fatten all manner of barren grounds, as namely the haire of beasts hydes, (which for the most part Tanners and Glouers cast away) this thinnely spread on the land, and plowed in, brings every yeare a fruitfull crop.

Againe, if Braken or Ferne bee laied a foot thicke vpon the earth, and then a layer of earth vpon it, then another layer of Braken, and another layer of earth, and so layer vpon layer till the heape be as bigge as you intend it, and so left to rot all the Winter following, there cannot be a better measure for any arable ground; for you shall vnderstand that the earth will so rot the Braken, and the Braken so soake into the earth, that they will become both one rich substance. And herein you shall note, that whensoever you would haue any substance (of what condition soeuer) quickly to rot and turne to measure, that the onely way is to mixe it with earth, and that will in short space bring it to rottenesse. Now this Braken

and

and earth thus rotted, you shall lay vpon your land as you do your ordinarie dung of cattell, and then sow your Seed being steept, as aforesaid.

Of malt
dust.

Next, your Malt-dust which is the sprout, come, smytham, and other excrements of the malt, is an excellent meanure for arable land, allowinge three quarters thereof for an acre, and strowing it vpon the land after it is plowed and ready to be sowne.

There is another meanure, which albe it is not plentifull euery where, yet in some places it is, and there not inferior to any meanure before spoken of, and that is your rotten pilchards after the oyle is taken from them, and the carcasses cast to the dunghill, this laid on the land, and plowed in, bringeth corne in great abundance, and no lesse doth the carcasses and garbage of all kind of fish whatsoeuer, especially of sea-fish.

Of rotten
Pilchards
and garbage

Lastly, the blood, entrals, and offall of any beastes is an excellent meanure for any kind of graine, plant, or tree, but especially for the vine, for to it there is no nourishment of greater force or efficacie: also, if this blood be tempered with lime it is exceeding comfortable for graine, and destroyeth wormes, and other creeping things which hurt corne, only it must not be applyed presently, but suffered for a little time to rot, least the too much heate thereof might scorch and do hurt to the root of the corne: this meanure is to be laid on the earth when you sow it, and so the Seed and it harrowed or plowed in together, which done after the order of good workmanship, there is no doubt of the increase.

Of blood
and offalls.

CHAP. XI.

*How to enrich for Corne any barren, rough, wooddie ground
being newly stubbed vp.*

*Additions,
the whole
Chapter.*



IF you haue any barren wooddie ground which is newly stubbed vp, and that you would conuert it to arable, you shall then take a great quantitie of the vnderwood, or worst brush wood which was cut from the same, and in the most conuenientest place in the field, as in the midst, or neere thereabout, you shall frame it into a broad hollow pyle, and then couer it all ouer with great sodds of earth, which done, set fire on it, and leaue no part thereof (either wood or earth) vnburnt, then take those
 Wood ashes
 ashes and spread them all ouer the field, so farre forth as you meane to plow vp, then with a good strong plow fallow the ground as deepe as you can, and lo let it rest till it be almost May, then take either Ferne, Stubble, Straw, Heath, Furres, Sedge, Beane stalkes, or any other wast growth, take I say either any one, or more of these, or all together, as you stand possesse of them, and burne them to ashes, and therewith couer your land the second time, and then Sommer stirre it, within a Moneth after foyle it, then at the beginning of October, or a little before, plow it againe, and sow it with Rye the first crop, and you shall see the increase will be very plentifull, the next yeare you may sow it with Wheate, the third yeare with Barley, the fourth yeare with Pease, Lupins, Fetches, or any other Pulse, and then beginne with Wheate againe; for it is credibly said, that this manner of dressing these barren, wooddie grounds, shall maintaine
 and

*Ashes of
Ferne,
Straw, &c.*

and keepe the earth in good heart and strength (in the worst places) for the space of foure yeares; in that which is any thing reasonable for the space of fixe yeares; and where there is any small touch of fertilitie for the space of sixteene yeares; of which there are dayly experiences in France, about the forest of Ardenna, and some with vs here in England in many wooddie places.

CHAP. XL.

The manner of reducing againe, and bringing unto their first perfection all sorts of grounds which haue bene overflowed, or spoyled by salt-water, or the Sea-breach, either arable, or pastuze, as also the enriching or bettering of the same.



Here is nothing more hard or difficult in all the art of husbandrie, then this point of which I am now to intreat, as namely, the reducing and bringing vnto their first perfection all sorts of grounds which haue been ouer-flowed or else spoyled by the Sea-breach, and bringing in of too great abundance of salt-water, which to some men (of little experience, and free from those dangerous troubles) may appeare a matter very sleight, and the wound most easie and curable, and the rather, because in all my former relations and demonstrations touching the bettering of euery severall sort of ground, I do apply as one of my chiefest ingrediens or simples, by which to cure Barrennesse, Salt sand, Salt weeds, Salt water, Salt brine, Ashes, Lime, Chalke, and many other things of a salt nature, (as indeed all meaures and marles whatsoeuer must either haue a salt qualitie in them, or they cannot produce fruitfulnessse)

*Additions
the whole
Chapter.*

The difficultie of this labour.

The vertue of salt.

The vices
which come
from Salt,

fulnesse) so that to argue simply from naturall reason, If salt bee the occasion of fruitfulnessse and increase, then there cannot be much hurt done by these overflowses of the salt water, but that it should rather adde a fattening and enriching to the ground then any way to impouerish it, and make it incapable of growth or burthen. But experience (which is the best Mistresse) shewes vs the contrarie, and there is nothing more noysome and pestilent to the earth then the superabundance and too great excessse of saltnesse; for according to our old Prouerbe of *omne nimium*, that too much of euery thing is vitious: and as we see in the state of mans bodie, that your strongest poysons, as *Antimonie* or *Stibium*, *Coloquintida*, *Rubarb*, and the like, taken in a moderate nature, are most healthfull, and expell all those malignant qualities which offend the bodie, and occasion sicknesse; but taken in the least excessse that can bee deuised, they then (out of their vitious and naughtie qualities) do suddenly and violently destroy all health, and bring vpon the bodie ineuitable death, and mortalitie; so is it with this matter of salt, and the body of the earth, for as by the moderate distributing thereof, it correcteth all barren qualities, disperseth cold and naughtie vapours, and yeeldeth a kind of fatnesse and fruitfulnessse, whereby the Seede is made more apt to sprout, and the ground more strong and able to cherish the same till it come to perfection, through the sharpe, warme, and dispersing qualitie thereof; so being bestowed in too great abundance and excessse, whereby the earth is surfeited, and as it were overcome and drowned vp with too much of this naturall goodnesse and helpfull qualitie, then all his proper vertues turne to egregious vices, as his wholesome sharpnesse to a fretting, gnawing, and destroying greedinesse; his comfortable

warmed.

The abuse
of Salt in
excesse.

warmenesse to a consuming and wasting fierinesse and his gentlenesse in dispersing to an infectious and venomous pollution, by the ioynt qualities of all which together, the ground is made neither fitte to receiue any thing from the hand of the Husband man, nor yet to produce or bring forth any thing of it selfe, because euery good qualitie is abused or expelled, and nothing but vnnaturalnesse and sterility left; which like a Serpent lodgeth in the ground and will suffer no good thing to haue society with it; and these are the effects and mischiefes which are occasioned by these Sea breaches or inundations of the salt water.

It is certaine that although in the salt marshes, where the sea commeth in at certaine times and onely washeth or sprinckleth the ground all ouer and so departeth, there is neither want of grasse, nor yet complaint of any euill quality in the grasse, yet it is most certaine that no ouer-flow of salt water how little or moderate soeuer, can bee truly said to bee wholesome for any kind of grasse ground whatsoeuer; for grasse is compounded of an infinite world of plants and simples, and most of them of seuerall natures and qualities, so that if it giue nourishment to one, yet it may destroy renne; neither doe I finde it by any of the Ancients simply and properly applied vnto the grasse grounds, but first vnto the arable, in which hauing spent its primary or first strength vpon the seede (which is a great and greedy deuourer or eater vp of the strength and fatnesse of the earth) it then prepares and makes the ground more able and fit to bring forth grasse, and that of the best and finest kind, for although the Masters of the Salt marshes finde a singular and rare profit in those grounds for the feeding, breeding, fating, and sustaining of their great flockes of sheepe, which vpon these salt

K

grounds

Of salt moderately vfed.

No ouer-flow of salt water good for grasse.

The grounds of the salt Marshes.

A true cause
of barren-
nesse.

Where this
annoyance
is incurable.

Where it is
curable.

grounds, they say, will neuer rot or perish by that vniuersall disease, yet must they not impute that to the great quantitie, goodnesse, or any growth in the grasse, but to the salt which they licke vp in the grasse, and to the salt qualitie of the grasse, which is not onely an antydote or preseruatiue against that noysome and pestilent mortality, but also a delightfull and pleasant food wherein those cattell take more contentment then in any other thing whatsoeuer; so that I must necessarily rest vpon this conclusion, that as but moderate washing and overflowing of salt waters are no certaine or particular great helpes vnto grasse grounds, especially if they be applyed therunto, and to that purpose simply at the first, without any other preparatiue or working by a former meanes, as by tillage, digging, deluing, or the like; so the exceeding great inundations or Sea-breaches which lye long soaking and sinking into the earth must needs be a certaine, infallible, and almost incurable cause of barrennesse, eating, spoyling, and consuming the very rootes of all manner of plants, trees, and growthes, by which the ground is made utterly incapable of generation or bringing forth: and therefore where these great inundations or overflowsings cannot be either prevented or auoyded, but as the seasons of the yeare they doe and must hold their courses, there I would not wish any man to bestow eyther his labour or his cost, for it is losse of time and losse of substance: but where it is to bee prevented or auoyded by industrie, or that those overflowsings or Sea-breaches come and happen by casuallie or change, as eyther by the vnnaturalnesse and superabundance of tydes being driuen in by the violence and impetuousnesse of outrageous winds, or by any neglect or breach in the Sea wall, or other mishaps of the like nature, which happeneth
some-

Sometimes scarce one in an age, at the most not above once or twice in many yeares; in these cases there is most certaine remedie, and the grounds so spoyled and wasted, may by art and industrie be againe reduced and brought to the former perfection and goodnesse; nay many times amended and freed from many faults and sterile qualities, to which it was either naturally addicted, or else by chance and accident grew thereunto, by continuall wearying and imployment, without rest, or refreshing by the artificiall meanes of wholesome meanures, or other strengthenings which ought to bee applied before those faults grew into extremities.

Now touching the cure of these grounds which are thus worne out, decayed, and made barren by these inundations of salt water, the owner thereof is first to draw into his consideration, that as the malignity and euill qualitie of the earth is growne by too much fretting, gnawing, and wasting of the salt, so it must be allayed and qualified by a quite contrary condition, which is freshnesse: the contrarie then to salt water, must of necessity be fresh water, so that you are to cast about in your iudgement, and by the view, situation, & leuell of the ground (which for the most part can haue but little difficulty in it because these grounds vpon which the Sea thus breaketh, must euer be the lowest of all other, so that a true descent comming vnto it, and a true ascent comming from it, there is no hardnesse to conuey any water course therunto) looke how to bring a freshnesse which may conquer and overcome this saltnesse, and that must therefore be fresh water, which by channels, ditches, furrowes, sluices, and the like, you may bring from any fresh riuer, spring, pond, or other fresh water course (though remoued some distance of miles from the place to which you would conuey it)

The manner of the cure.

One contrarie helps another.

The watering with fresh water.

How to
draine away
the fresh
water.

How oft to
drownd the
earth.

Helps if
fresh water
be wanting.

Whether
brackish wa-
ter be whol-
some.

to the very place to which you desire to haue it, and with this fresh water you shall wash and gently drowne ouer so much of your spoyled ground as you shall be able reasonably to deale withall in other costs and labours for that yeare; and if you haue plentiful store of fresh water, then hauing (as I said) drowned it ouer gently, about foure inches, or halfe a foot deepe, you shall so let it lye two or three dayes, then drayne away that water by the help of backe ditches, or by sluices made for that purpose, which if the situation of the ground deny you, and that there is no such conuenient conueyance, then you shal in the lowest part of the ground (either ioyning vpon some other spoyled ground, or vpon the Sea wall or banke) place a Coy which may either cast the water into the other ground, or else ouer the wall and banke into the Sea; and hauing thus drayned away the first water, you shall then open your sluices of fresh water againe, and drowne your ground ouer the second time, and do in all things as you did before, and thus according to the plentifulnes of your fresh water, you shal drowne you ground, or at least wash it ouer with fresh water twice a weeke before the beginning of the Spring, and if the salt water haue laine long, or be but new departed, then you shall continue the vse of your fresh water for some part of the Spring also.

Now some may obiekt vnto me here (and it is a matter not altogether vnlikely) that in some of these places where these inundations and breaches are, it is impossible either to find fresh water, or to bring fresh water vnto them, because all the springs for many miles about being made naturally brackish, and the rivers by the infection of the salt tides, hauing lost the greatest part of their sweet freshnes; the question now resteth, whether these brackish waters are wholesome for this purpose, I or no? to this

I must

I must need answer, that they cannot in any wise be good for these spoyled grounds, because the earth naturally is of an attractive & drawing condition, sucking and gathering vnto it selfe any thing that is of a sharp, sweet, or softer tast, and especially saltnesse, so that being couered with those brackish waters, it will draw from them only their salt (of which it hath too much already) & no part of the freshnes which should qualifie & amend it: therefore if either your ground bee thus situated, or your necessities thus vnsupplied, it is better that you rather forbear this labour of washing or drowning your earth, (though it be the first, the speediest, & surest cure of all other) then by watering it with infirme and vnwholsome waters, rather increase the mischiefe, then any way delay it.

After you haue watered your ground (if it be a worke possible to be attained vnto) or otherwise neglected it (being a thing not possible to be found) you shall then about the latter end of March plow vp all the ground with a good deep stich, turning vp a large furrow, & laying it into lands, raise them vp as much as you can, & make them round, then looke of what nature or temper the earth is, as whether it be fine sand, rough grauell, stiffe clay, or a mixt earth, or any of these contraries together: If it be a fine sand, either white, red, or browne, it matters not whether, then you shall rake any clay earth which is free from these salt washings, being of a meane or small stiffenes, & likewise of as meane and little richnes, which being digged out of some banke, pit, or other place where least losse is to be had, you shall carry it in tumbrels or carriages to the new plowed ground, & there first lay it in heaps as you do measure, then after spread it all ouer the land, and being dry, with clotting beetles breake it as small as you can possibly, for this hungry clay being of no rich or

The first time of plowing, and the observations therein.

How to mixe earths.

fat cōdition, will so suck & draw the salt into it, that it will take away much of the euill quality, & mixing his tough quality with the loose condition of the sand, they wil both together become apt for fruitfulness and generation.

The mix-
ture for gra-
uell.

If the soyled ground be a rough hard grauelly earth, then you shall mixe or spread vpon it the best and richest fresh clay you can get, or if there be any such fruitfulness neere about you, then with good blew marle, for that is the coolest and the freshest, and will the soonest draw out the salt from the grauell, and giue it a new nourishment, whereby any seed shall be fed and comforted which is cast into it.

The mix-
ture of clay.

If the spoyled earth bee of it owne nature a stiffe and tough clay, which is but seldome found so neere the sea-shoare, then after the plowing, you shall mixe it, and couer it ouer with the freshest and finest sand that you can possibly get, for that will not onely sepearate the salt from the clay, and take away the naturall toughnes & stifnes of the same, which hindreth and suffocateth the tender sprouts, so as they cannot easily get out of the earth, but also by lending a gentle warmth, will assuage the cold quality of the clay, & make it bring forth most abundantly

The mix-
ture of mixt
earth.

Lastly, if the spoiled earth be of a mixed quality, then you shall looke whether it be binding or loosening, if it be binding, then you shall mixe or couer it with fine fresh sand, if loosening, then with a reasonable rich and tough clay, for so you shall bring it to an open and comfortable temper, making it able both to receiue, cherish, and bring forth the seed, which before either too much wet, or too much driness did stifle and bind vp within the clots and mould, so as it had no strength to beare it selfe through the same.

The second
plowing.

When you haue couered your lands with this mixture,
you

you shall then plow it ouer againe before *Midsomer*, turning the new laid earth vnder the old earth, and as soone as that labour is finished, you shall then lade forth your measure or compasse vnto it, in which you are to haue a great care what measure you elect for this purpose, for it is not the richest and fatest measure (as your Pidgeons dung, or Pullens dung, Lime, Chalke, or ashes, your Horse dung, your shouclings vpon high-ways, your Beasts houes, your horne shauings, your Hemp-weede, or any other weede which groweth neere the seydge of the Sea, neither your Oxe or Cow-dung, though of all before named, that is the best which doth the most good vpon these spoyled grounds, because they haue all in them a strong qualitie of saltnes or sharpnesse, which will rather adde then diminish the euill quality of the earth, but instead of these you shall take the mudde and dried bottoms of Lakes, Ponds, and Ditches of fresh water, and the moysture or wetter such mudde or bottomes are, the better it is, or Straw which is rotted by some fresh water-course, raine, or the like, by no meanes that which is rotted by the vrine or stale of Horse or cattell, for that is the saltest of all other; or you may take any weedes which you see grow in fresh Riuers, Ditches, Ponds, or Lakes, especially those which grow at the bottomes of Willow, Sallow, or Osier trees, or you may take the old Ragges of wollen cloth, or any other measure which you know to bee the wollest or freshest, and with any of these or all of these together, you shall very plentifully couer your ground all ouer, and immediatly vpon the couering or laying on, see you presently plow it, land after land; for to giue it any long respite after it is spread, the Sunne out of his attractiue and strong nature will exhale and draw out all the vertue from your measure,

Ellection of
measures.

The best
measure.

The orde-
ring of the
measure.

The third
plowing.

measure, and so spoyle much of your labour.

The last
plowing,
and the
sowing.

The second
yeare sow-
ing and the
third.

Laying the
earth for
grasse.

Of grazing.

When you haue thus measured it, and plowed it, you may then let it rest till *Michaelmas*, at which time you may plow it the last time, and then sowe it with the strongest and hardest Wheate you haue, of which the white Pollard is the best, and there is no question but if it bee safe from a second Inundation, your Croppe will both be plentiful and rich, and also acquit and pay largely for all your former charges. The second yeare you neede but onely plow it as aforesaid; and then sowe it with good Hemp-seede, and be assured you will haue a braue croppe arise thereof; then the third yeare you shall plow it as flatte as you can, still throwing it downe and not raising it vp at all, and then sowe it with the best Oates you can get, according to the nature and strength of your Countrie, and bee sure to Harrow it well, and to breake euery clotte, and make the mould as fine as is possible, and the next yeare after your Oates, lay it for grasse, and I dare bee bold it will beare reasonable meadow; yet would I not haue you this yeare to preferue it for that purpose; but rather to graze it with sheepe or Cattell, especially sheepe, of which I would haue you lay on good store; for it matters not how neare or close to the ground they eate it; for the next yeare it will bee come to the fulnesse of perfection; and bee as profitable or more profitable ground then euer it was, and then you may apply or accommodate it for what vse you please, either arable meadow, or for continuall grazing. And thus much touching the manner of reducing againe and bringing vnto their first perfection, all sorts of grounds which haue bin ouer-flowed or spoyled by Salt water, or the Sea-breaches; whether it be arable or pasture; as also the enriching or bettering of the same.

CHAP. XIII.

Another way to inrich barren pastures, or meadowes, without the helpe of water.



IF your Barren pastures or Meadowes be so seated that there is no possible meanes of washing or drowning them with water, you are then onely to restore and strengthen them by the efficacie of manure or soyle, without any other helpe, and this may diuers wayes be done, as by those manner of manurings which I haue formerly treated of. But to goe a better and briefer way to worke, and more for the ease and capacitie of the plaine Husband-man, when soeuer you shall bee possesst of these barren pastures, if the barrennesse proceede from Sand, or Grauell, then some Husbands vse to manure the pasture ouer with the best Clay they can get, first laying it in heapes, then spreading it, and lastly with clotting beetles breaking it into as fine dust as they can get it, and this labour they commonly performe as soone as they can after Haruest when the latter spring is eaten, and the earth is most bare, but if the barrennesse proceed from an hungry, cold and dry Clay, then they manure it with the best Moorish blacke earth which they can get, or with any moyst manure whatsoever, especially and aboue the rest, with the soyle that is digged out of old Ditches, Ponds, or dried vp standing lakes, and this earth must bee laid plentifully vpon the ground in manure as afore said, that is to say, first in great heapes, then after broken and dispersed ouer the whole ground, and lastly broken into small dust, and mixed with the swarth of the ground, and this labour ss the o-

Clay manure.

Moorish earth,

The best
way to in-
rich pasture
or meadow.

The soyle of
the streetes,
or high-
wayes.

Earth vnder
dung-hills.

To enrich
Gardens, or
Orchards.

ther is generally performed after the Haruest as a time of most conuenience, and giuing the eath a fit respit to suck in the strength and comfort of the new earth, and also hauing all the Winter after with his frosts, snowes, and showers, to mellow, ripen and mixe together the one earth with the other, and doubtlesse this is a most exceeding good Husbandry and not to bee refeld or carpt against by any knowing or sound iudgement, onely it is not the most absolute, or the best of all wayes whatsoever, but that others may be found somewhat more neare, and somewhat more commodious. Therefore whensoever you shall bee owner of any of these barren pastures, or Meadowes, of what nature or condition soeuer the earth be, whether proceeding from Grauell, Sand, Clay, or pesterd with any other malignant qualitie whatsoever, to reduce it to fertilitie and goodnesse in the shortest time and to the most profit, about the moneth of March, when all pasture grounds are at the barest, and doe as it were remaine at a stand betweene decreasing, and increasing, you shall begin then to leade forth your measure for the refreshing of these Earthes, and the measure which you shall cary vnto these grounds, shall be the soyle of streets within Cities, or Townes, or the parings and gatherings vp of the high-wayes much beaten with trauell, also the earth for two or three foote deepe which lieth vnder your dung-hill when the dung is remooued, and caried away, for this is a most precious and rich mould, and is not alone excellent for this vse, but also for the vse of Gardens, for strengthening and comforting of all sorts of tender Plants, and for the vse of Orchards, for the comforting both of olde and yong trees, when at any time their Rootes are bared, or otherwise when there groweth any mislike or decreasing.

You

You shall also take the fine earth or mould which is found in the hollow of old Willow trees, rising from the roote vp, almost to the middle of the Tree, at least so farre as the Tree is hollow, for then this there is no earth or mould finer or richer. Of all of these meanures, or of any one of them, or of as many as you can conueniently get, you shall leade forth so much as may very plentifully measure and couer your ground all ouer; you shall first lay it on the earth in reasonable bigge heapes that the Sunne may not exhale the goodnesse out of it; and then at your best leasure and so soone as you can conueniently you shall spread it vniuersally ouer all your field, dispersing it as equally as you can, vnlesse your field bee more barren in one place then in another, which if it bee, then you shall lay the greatest plenty where it is most barren, and the lesse where you find the greatest fertilitie, yet by all meanes see you scant not any place, but giue euery one its due; for to doe otherwise would shew much ill Husbandrie.

The mold
in Willow
trees.

Now it is the vse of some Husband-men, that what mould or earth they lade out from fixe of the clock in the morning, till three of the clock in the after noone, that they make their Hindes spread in the Euening before they goe to Supper, and questionlesse it is a very good course, and worthy to bee imitated of euery good Husband.

The spread-
ing of
mold.

After you haue laid forth your molde and spread it all ouer your pasture or meadow, then you shall make some boyes, gerles, or other poore people, to picke and gather vp all the stones, stickes, or other vnnecessary matter which might happen to bee led forth with the mold, and to pick and lay the pasture so cleane as is possible,

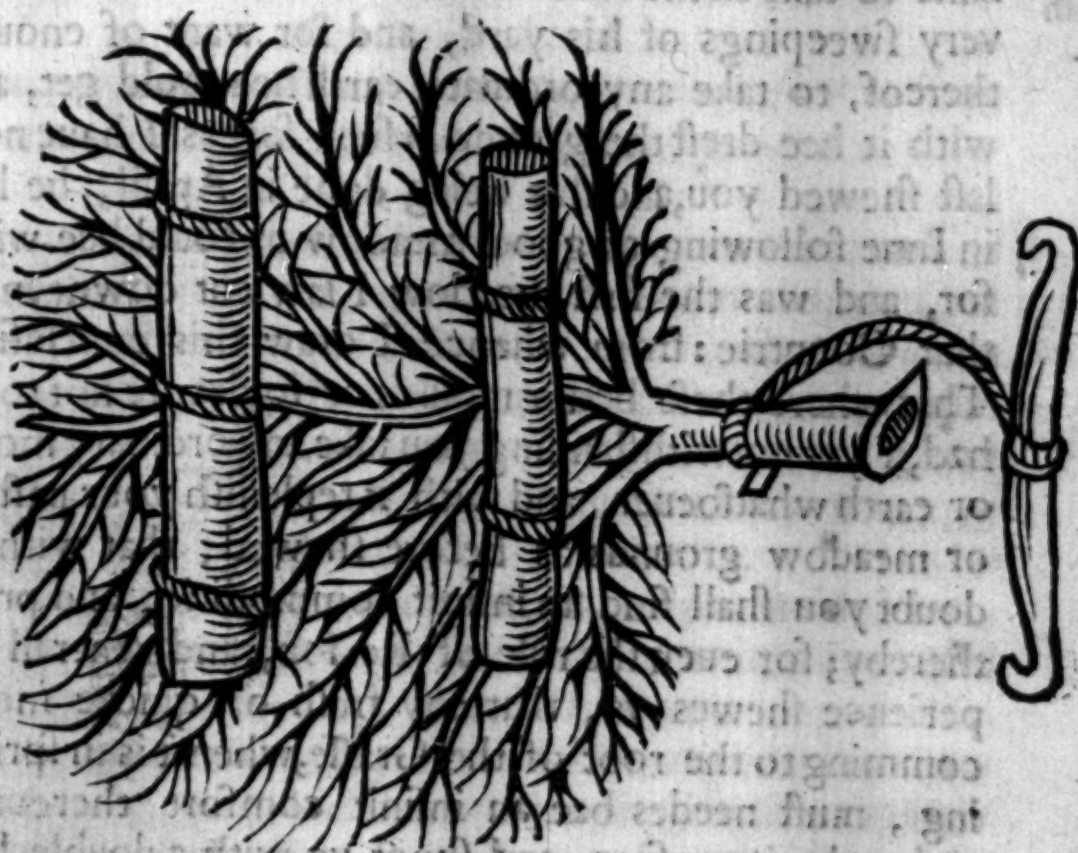
Of stone ga-
thering.

which done, it is to bee intended that yet not withstanding this ground will lye exceeding rough, both in respect of the clottes of earth, which will not easily bee broken, as also in respect of naturall roughnesse of these rich molds which at this time being digged vp in the wet, will not easily bee seperated or dissolved, and therefore when you haue finished the labours before said; you shall let the clottes rest till the Sunne and weather haue dried them, then after a good ground shower (observing to take the first that faileth) you shall harrow all your ground ouer after this manner.

A new way
of harrow-
ing.

You shall cut downe a pretie bigge white thorne Tree, which wee call the Hawthorne Tree, and make sure that it bee wonderfull thicke, bushie, and rough growne, which done you shall plash it as flatte as you can, and spread it as broad as you can, and those branches or boughes which of necessitie you must cut in sunder, you shall againe plash and thrust into the bodie of the Tree, binding them with cords or Withes so fast thereto, that they may by no meanes scatter or shake out, and if any place appeare hollow or thin, and cannot come to lie hard, firme and rough vpon the ground, then you shall take other rough bushes and thrust into the hollow places, and bind them from stirring, also till you haue made you plashe full and equall in all places, and that all the roughnesse may as in a flat leuell equally touch the ground, when you haue thus proportioned your Harrow, you shall then take great Logges of wood, or peeces of Timber, and with Ropes binde them on the vpper side of this rough Horrowe that the poysc or weight of them may keepe the rough side

side hard and firme to the earth, and then the Harrow will carry this proportion or figure.



To the big end of this Harrow, you shall fixe a strong rope, with a Swingle-tree with Treats, Coller, and Hames, and one Horse is fully sufficient to draw it round about the pasture or meadow, so with this Harrow you shall Harrow the ground all ouer, and it will not onely breake all the hard clots to a very fine dust, but also disperse them and driue them into the ground, and giue such a comfort to the tender roots of the yong grasse then newly springing, that it will double

Of rubbish
and sweepings.

and treble the increase. And for mine owne part, this experience I my selfe haue seene vpon an extreame barren pasture ground in Middlesex, where none of these goods moulds or soyles could bee got, but the husband was faine to take all the rubbish and course earth euen to the very sweepings of his yard, and for want of enough thereof, to take any ordinarie earth hee could get, and with it hee drest the ground in such sort as I haue now last shewed you, and this being done in Aprill, he had in Iune following as good meadow as could bee wisht for, and was the first meadow I saw cut downe in all that Countrie: from whence I draw this conclusion, That where these better moulds or soyles are not to be had, if yet notwithstanding you take any ordinary mould or earth whatsoeuer, and with it replenish your pasture or meadow grounds as before shewed, that without doubt you shall find an infinit commoditie, and profit thereby; for euen the rule of Reason, and generall experience shewes vs, that any fresh or quicke mould comming to the root of the Grasse, when it is in springing, must needes bee an infinit comfort thereunto, and make it prosper, and shoot vp with a double hast, and therefore I would haue euery husbandman to make much of the rubbish, sweepings, parings, and spyrings of his house and yard, as also of shouelings vp of the highwaies, backe lanes, and other such places, and especially, if they bee any thing clayie, or morish, or sandie mixt with any other soyle; for of them he shall find great vse, according to the husbandrie and experience alreadie described.

Of soap-
ashes.

Lastly, there is not any thing that more enricheth pasture or meadow ground then Soape-ashes, being thinly scattered and spread over the same, and this labour

labour would neuer bee done at the latter end of Aprill, for then grasse is beginning to shoot vp, and at that time finding a comfort, the increase will multiplie exceedingly.

CHAP. XIIII.

How to enrich and make the most barrenest soyle to beare excellent good pasture or meadow.



O speake then of the bettering and enriching of these barren earths, and reducing them to good pasture or meadow, it is to be vnderstood, that there are but two certaine wayes to compasse and effect the same, namely water or manure.

Two wayes
to enrich
earthes.

You are then when you go about this profitable labor, first to consider the situation of the earth, you would conuert to pasture, and to select for this purpose the best of this worst earth you can find, and that which lyes lowest, or els that which is so descending, as that the bottom thereof may stretch to the lowest part of the continent, for the lower that such grounds lie, the sooner they are made good, & brought to profit: Next you shal consider what burthen or grasse it bears, & whether the grasse be cleane and entire of it selfe (which is the best & likeliest soile to be made fruitfull) or els mixt with other worse growths, as thistles, heath, broome, or such like, and if it be burthened with any of these naughty weed, you shal first destroy them by stubbing them vp by the rootes, and by burning the vpper swarth of the earth with drie straw mixt with the weeds which you shall cut from the same, then it shall be good for certaine nights both before

before the first and latter Spring to fold your sheepe vpon this ground, and that not in a scant manner, but very plentifully, so as the dung of them may couer ouer all the earth, and their feete trampling vpon the ground, may not onely beate in the dung, but also beate off all the swarth from the earth, that where the folde goeth, there little or no grasse may bee perceiued, then whilest the ground is soft, and thus trampled, you shall sow it all ouer with Hay seedes, and then with your flat board beetles beate the ground smooth and plaine, which done, you shall then strow, or thinly couer ouer the ground with the rotten staddels of Haystacks, and the moyst bottomes of Hay-barnes, and ouer that you shall spread other strong manure, of which Horse-dung, or Horse-dung and mans ordure mixt together is the best, or for want of such, either the manure of Oxen, Kine, or other Beasts; and this manure also you shall spread very thinne vpon the ground, and so let it lye till the Grasse come vp through the same, which Grasse you shall by no meanes graze or feede with your cattell, but being come to the perfectnesse of growth, you shall mowe it downe, and although it will bee the first yeare but short and very course, yet it skilleth not, for the ensuing yeares, shall inn the profit, and bring forth both so good grasse, and such plenty thereof, as reasonably you can require: for this is but the first making of your ground, and alteration of the nature thereof, neither shall you thus dresse your ground euery yeare, but once in twentie, or fortie yeares, hauing plentie of water to relieue it. When therefore you haue thus the first onely prepared your ground by destroying the barren growth thereof, and by manuring, sowing, and dressing it, you shall then carefully

search

Of watering grounds.

search about the highest parts of the ground, and the highest parts of all other grounds, any way neighbouring round about it, and somewhat about the levell thereof, to see if you can find any Springs in the same, (as doubtlesse you cannot chuse to doe, except the ground bee of more then strange nature,) and the heads of all such Springs as you shall finde, you shall by gutters and channels draw into those ditches which shall compasse your meadow ground about, observing ever to bring the water into that part of the meadow ditch which ever lyeth highest, and so to let it have a currant passage through the ditches downe to the lower part thereof, and so into some Lake, Brooke, or other channell, and in this sort you may bring your water a mile or two: Nay I have seene water brought for this purpose, three or foure miles, and the gaine thereof hath quit the charge in very plentifull manner.

But if you cannot find any Springs at all, nor can have the helpe of any Lake, Brooke, River, or other Channell of moving water, (which is a doubt too curious, as being cast beyond the Moone) you shall then not onely cast ditches about this your meadow ground, but also about all other grounds which shall lye about, and that in such sort, that they all may have no passage but into the vpper part of the meadow ditch, so that what raine so ever shall fall from the skie vpon those earths, it shall bee received into those ditches, and by them conveyed into the meadow ditch: and to augment the store of this water, you shall also in sundry parts of those vpper grounds which are above the meadow, in places most convenient, digge large Ponds, or Pits, which both of theselues may breed, and also receive all such water as shal fall neare about them, and these Ponds or Pits being filled (as in the Winter

Helps in the watering.

M

time

time necessarily they must needs be at every glut of raine) you shall presently by small draynes made for that purpose, let the water out from them into the ditches, and so into the meadow ditch, and so stopping all the draynes againe, make the Ponds or Pits capable to receiue more water.

When and
how to wa-
ter.

When you haue thus made your ground rich with water, and that you see it flow (as in the winter time necessarily it must) in plentifull manner through all your ditches, you shall then twice or thrice in the yeare, or oftner, as you shall then thinke meet in the most conuenientest places of the meadow ditch, stop the same, and make the water to rise aboue his bounds, and to ouerflow and couer your meadow ground all ouer, and if it be a flat leuell ground, if you let the water thus couering it to lye vpon the same the space of foure or fise dayes or a weeke, it shall not be amisse; and then you may water it the seldomer. But if it lye against the side of a hill, so that the water cannot rest vpon the same, then you shall wash it all ouer, leauing no part vnmolsted, and this you shall doe the oftner, according as the weather shal fall out, and your water grow more or lesse plentifull.

The best
season for
watering.

Now for the best season or time of the yeare for this watering of meadowes, you shall vnderstand, that from Alhallontide, which is the beginning of November (and at which time all after-growth of meadowes, are fully eaten, and cattle for the most part are taken vp into the house) vntill the end of April (at the which time grasse beginneth to spring and arise from the ground) you may water all your meadowes at your pleasure without danger, if you haue water enough at your pleasure, and may spend or spare at your will; yet to doe it in the best perfection, and whereby your ground may receiue the greatest.

test benefit; you shall vnderstand that the onely time for watering of your meadowes, is immediatly after any great Fluxe of rain, falling in the Winter any time before May, when the water is most muddy, foule and troubled, for then it carieth with it a soyle or Compasse which being left vpon the ground, wonderfully enricheth it, and makes it fruitfull beyond expectation, as dayly is seene in those hard countreys where almost no grasse growes but by this industry: And here you must obserue, that as you thus water one ground, so you may water many, having euer respect to begin with the highest, and so to let the water passe out of one ground into another vntill it come vnto the lowest, which commonly is euer the most flat and leuell, and there you may let the water remaine so long as you thinke good (as was before shewed) and then let it out into other waste ditches or riuers. And here you shall know that this lowest ground will euer be the most fruitfull, as well because it lyeth the warmest, moystest, and safest from stormes and tempests, as also because what soyle or other goodnesse this ouer-flow of water, or the raine washeth from other grounds, it lea- veth vpon this, and so dayly increaseth the fertilitie, from whence you shall gather, that at the first making of these medow grounds you may bestow lesse cost of meanure and other charges vpon this lowest, flat, leuell ground, then on the higher: and so by that rule also obserue to bestow on the highest ground and the highest part of the highest ground euer the greatest abundance of meanure, and so as you shall descend lower and lower, to lay your meanure thinner and thinner, yet not any part vtterly vnfurnished and voyd of Compasse, yet as before I said you are to remember that these medow grounds need not this much vse of meanure (having

this benefit of water, and the first yeares dressing as was shewed in the beginning of this Chapter) about once in twenty yeares ; nay it may bee not about once in a mans life time.

And here also is to be considered, that the water which commeth from Clay or Marle grounds, being thick, muddy and pudly, is much better and richer then that which commeth from sand, gravell or pibble, and so runneth cleare and smooth, for that rather doth wash away and consume the goodnesse of the ground, then any way adde strength therevnto.

CHAP. XV.

Of the enriching and dressing of barraine grounds, for the use of Hempe or Flaxe.

Grounds ill
for Hempe
or Flaxe.



OU shall vnderstand that there are two sorts of grounds which out of their own natures vtterly refuse to beare Hempe or Flaxe ; that is, the rich stiffe blacke clay, of tough, solid, and fast mold, whose extreame fertilitie and farnesse giveth such a surcharge to the increase of the seed, that either with the ranknesse, it runneth all into Bun and no Rinde, or else the seed being tender, and the mould sad and heauie, it buryeth it so deepe therein, that it can by no means get out of the same, but lies choaked and consumed without profit, the other is the most vilde and extreame barren ground, which by reason of the climate wherein it lies, is so exceeding sterile and vnfruitfull that it will neither beare these seeds, nor any other good seed ; and of these two soyles onely I purpose in this place to intreat, for with such soyles as will naturally and commodiously beare

beare these seeds, I haue nothing to doe, in that I haue sufficientlie written of them in mine *English Husbandman*, and *English Huswife*, which are Bookes onely for good grounds, but this for all such grounds as are vtterly held without cure.

To beginne then with the stiffe blacke Clay, which al-
beit be very rich for Corne, is most poore for these seeds,
when you would reduce and bring it to beare Hempe or
Flaxe, which, neere vnto the Sea Coast, is of greater
price and commodity then Corne any way can be, espe-
cially adioyning vnto any place of fishing, in respect of
Nets & other Engines, which is to be made of the same,
and which being daily wasted and consumed, must like-
wise be daily replenished: You must first with a strong
plow, fit for the nature of such land, plow vp so much
ground as you intend to sow Hemp or Flaxe vpon, about
the middest of May, if the weather be seasonable, and the
ground not too hard: if otherwise, you must stay till a
shower doe fall, and that the earth bee moistned, then
shall you hacke it and breake the clottes in small pieces,
then with the sale Sea sand, you shall sand it very plenti-
fully, but if that be not to be gotten, and that you be ve-
rie well assured of the naturall richnesse of the earth, you
shall then sand it with the best red sand you can get or
find neere vnto you, and vpon euery Acre of ground you
thus sand with fresh sand, you shall sow three bushels
of Bay-salt, and then plow vp againe the earth, sand and
salt together, which would be done about the latter end
of the yeare, as after Michaelmas, and so let the ground
rest till seed time; at which time you shall first before
you plow it, goe downe to the low rockes on which the
Sea beats, and from thence with dragges and other En-
gines, gather those broad leaued blacke weeds, which are

Blacke clay
for Hempe,
&c.

called Orewood, and grow in great tufts and abundance about the shoare, and these Weeds you shall bring to your Hemp-land, and couer it all ouer with the same, and then you shall plow it againe, burying the weeds within the earth: And herein is to bee obserued, that in any wise you must lay these weeds as wet vpon the land, as when you bring them out of the Sea, provided still that you adde no other wet vnto them but the salt-water, for so they are of all soiles or meanures whatsoeuer, the onely best and fruitfulest, and most especially for these seeds, and breed an encrease beyond expectation.

When you haue thus plowed ouer the ground, you shall then hacke it againe, then sow it with either Hemp or Flax seed, which you please, and after it is sowne, you shall then harrow it (and not before) and you shall bee carefull to harrow it into as fine mould as you can, & this mould is likelie to runne fine enough, as well by reason of the fertilitie, as also of the mixture; yet what clots you cannot breake with your Harrowes, those you shall breake with your clotting Beetles, and such like Toolles: then after the first great shower which shall fall after your sowing, you shall runne ouer your land thus sowne with your backe harrowes, that is, with a paire of large Harrowes, the wrong side turned vpward, to wit, the teeth turned from the earth, and the backe towards the earth; and if need bee, you shall lay vpon the harrowes some indifferent heauie peece of Wood which may keepe the backe of the harrowes closer to the ground, and so goe ouer all the earth, and lay it as smooth and light as is possible, without leauing the smallest clot that may be vnbroken. Now if the ground be sowne with Hempe, you shall not thinke of weeding it at all, because Hempe is so swift a grower, and such a poison vnto all Weeds,

that

Weeding.

that it ouer-runne, choaketh, and destroyeth them; but if it be sowne with Flaxe or Lyne, which is a much tender seed, and bringeth forth more tender leaues and branches, then you shall watch what Weeds you see spring vp, and in their first growth plucke them vp and cast them away till you behold your Flaxe or Line to bee growne aboue the Weeds, and then you may let it alone also, for after it hath once gotten height, it will not bee ouergrowne with Weeds.

Now touching the other soile, which through the extreame barrenness thereof, refuseth to bring forth any good fruit at al; you shall in all points dresse it as you drest your plain clays, described in the 2 Chapter of this book, beginning at the same time of the yere that is then appointed; or (if more necessary occasions hold you) if you begin later it shall not be amiss, & then at *Michaelmas* you shall plow it ouer the second time, and measure it with the sea weeds, and so let it lie at rest vntill *March* (which is seed time) and then plow it againe, and measure it with the sea weeds againe, and after the plowing you shall hack it, and if in the hacking you find the earth stiffe & tough, then you shall harrow it before you sow it, then sow it and harrow it againe, breaking the earth so small and laying it so smooth as possible you can, vsing the helpe both of the clotting beetles & all other tooles which may be available for breaking the earth, and making the mould as fine as any ashes, then after the first great shower of raine, perceiuing the ground to be wel moistned, you shall instead of the backe harrowes (which vpon this earth may be too light) take the great rouser which is described in the book of the *English Husbandman*, being a great round peece of Timber of many squares, drawne either by horse or oxen but a single Horse is the best, both in respect of much treading

Making of il
earth beare,
&c.

treading the ground, as also for the swift going away or drawing of the same: for the swifter it is drawne, the better it breaketh the ground, and the lighter it leaueth the mould: and with this Rouler you shall run ouer and smooth your ground very well, leaving no clot vnbroaken, and so let it rest.

Weeding.

As for the weeding of this ground, you shall not respect it at all, for naturally it will put vp no weed, the very ground of it selfe being a very great enemy thereunto, nor shall you need to dresse this ground in the forme before said, aboue once in eight or ten yeates: onely euery seed-time when you plow it, (as you shall not need to plow it at any time, but seed-time onely) you shall before the plowing, couer or manure the land with the Seaweed before spoken of, which will giue strength enough to the ground, without any other assistance.

CHAP. XVI.

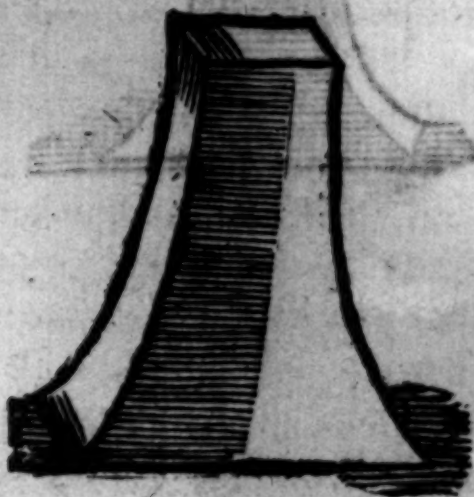
The manner of stacking of all kind of Graine or Pulse with greatest safety, and least losse.



IN these barren and hard countries, of which I haue formerly written, all sorts of buildings are exceeding costly and scarce, both in respect of the clime, which is commonly most extreme cold, mountainous, and much subiect to storme and tempest, as also through the great want of Wood and Timber, which in those hard soiles doth hardlie or neuer prosper, and therefore in such places building must be both small and deare, so that it will be verie hard for the Husbandman to haue houseroome for all his Corne, but that of necessitie hee must

must be enforced to stacke much or the most part of his corne without the doores, which albeit it be a thing very vsuall in this Kingdome; yet is it in many places so insufficiently done, that the losse which redounds thereby (partly by the moisture of the ground, which commonly doth rot and spoile at least a yard thicknesse of the bottome of the Stack next the ground, and partly through Mice, Rats, and other vermine, which breeding in the Stacke, doe eat and deuoure a great part thereof; as also through many such like negligent causes) is greater then a good Husband may with his credit be guiltie of, or a profitable Husband will by anie meanes suffer to be lost so negligently.

To shew then the manner how to stacke or mow your corne without the doores, in such sort, as neither the ground shall rot it, nor these vermines destroy it, nor anie other losse come to it by way of ill husbandrie, you shal first cause foure pieces of timber, or foure stones to bee hewed broad and round at the nether end, and somewhat narrower and round at the vpper end, like the fashion of a Sugarloafe, or this Figure.



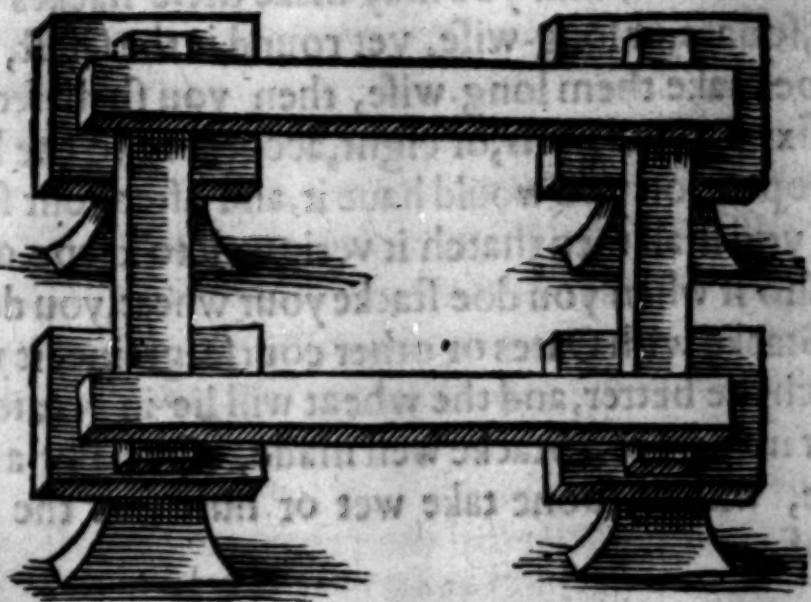
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And

And these peeces of wood or stone shall be in length three foot or thereabouts, and in compasse or bredth at the bottome, two foot, or a foot and a halfe, and at the top not aboue one foot: these foure peeces of wood or stone you shall place in your stack-yard, or other conuenient place neere your thrashing-floore, and you shall place them foure-square, of an equall distance one from another, then you shall cut out foure smooth boards of two inches and a halfe thicke at the least, and full three foot square euerie way, and these boards you shall lay vpon the heads or narrow tops of these stones or peeces of timber, according to this Figure.



Then shall you take strong ouerlyers of Wood, and lay them foure-square from one board to another, according to this Figure.



And then vpon those ouer-lyers you shall lay other smaller poles close one by another, and then vpon them you shall mow or stacke all your Corne, whether it bee Wheat, Barley, Oates, Pease, or anie other kind of graine, and be sure if you make your stacke handsome and vp-right, which consisteth in the Art and Workmanship of the workman, you shall neuer receiue losse in your corne, for the raising of it thus two or three foot from the ground will preserue it from all moisture or hurt thereof, and the broad boards which couer the foure ground posts will not suffer anie Mice of other vermine to ascend or come into the same.

Now for the manner of laying your corn into the stack you shall bee sure to turne that part of the sheafe where the eares of the Corne lie euer inward into the Stack, and the other which is the straw end, you shal euer turne

outward, and by that meanes you shall be assured that no flying fowle, as Pigeons, Crowes, and such like, can doe you any hurt or annoiance vpon the same: Lastly, you shall vnderstand, that you may make these stackes either round, square, or long-wise, yet round is the safest, and if you doe make them long-wise, then you shall set them vpon fixe ground posts, or eight, according to the length and proportion you would haue it, and after your stack is made, you shall then thatch it verie well to keepe out the wet; also if when you doe stacke your wheat, you doe top your Stacke with Oates or other course graine, it will be so much the better, and the wheat will lie in greater safetie, for no part of a Stacke well made, especially a round Stacke, will so soone take wet or hurt, as the toppe thereof.

CHAP. XV II.

The diseases and imperfections which happen to all manner of Graine.



Albeit the manner of stacking and laying vp of Corne or Graine in the forme before-shewed, may to euerie one giue an assurance for the safe and profitable keeping thereof as long as it endureth therein, and abideth in the care, yet because diuers necessities may compell the Husbandman to thrash out his Corne, as either for present vse of Straw, Chaffe, Garbidge, or other commodities needfull vnto him (as the season of the yeare shall fall out) I thinke it most necessarie in this place to shew how all manner of Graine and Pulse, of what nature soeuer may most safelie and profitably be kept from all manner of annoiances, or corruptions whatsoeuer, being

being a worke of that vtility and goodnesse, that not any belonging to the Husbandman doth exceed it: Nor shal it be sufficient to shew the offences and diseases of Graine with their cures and healthfull preservations, whilest it is in the Husbandmans possession, but also whilst it is in the earth, and at the mercy of cold, heat, moistnesse or drinesse, and not onely subiect to the malignant influences of starres and planets, with the increasing and decreasing of the Moone and her operations: but also of diuers other hurtfull vermins; as birds, wormes, pismires, dorres, snailles, moales, and other such like: some whereof consume and deuoure the grain ere it sprout: others in sprouting when the kernell is rotten and turned to a sweet substance, and others after it is sprouted by devouring the first tender leaues before they haue strength to appeare aboue the earth, being as it were but soft white threds not changed into the strength of greene, because the aire and Sunne hath not yet lookt vpon it.

To begin then with the first enemies of corne or graine after it is throwne into the earth, there is none more noisome then *crowes* and *choughs* and other smaller birds, which flocking after the seeds-man, will in a manner deuoure and gather vp the graine as fast as it is sowne, for as according to the old saying, *That many hands make light worke*; so many of their mouthes (being creatures that euer fly in flocks together) and their much nimblenesse in deuouring, soone rob the earth of her store, and deprive the labouring Husbandman of very much profit, and the graine which these creatures doe most consume, is all manner of white corne, as wheat of all kinds, barley of all kinds, rye and oates, as also hempseed, linseed, rapeseed and such like: Neither are they onely offensive during this time of sowing, but also after it is

Crowes, Pigeons, and Birds.

sowne and covered, digging it with their strong bills out of the earth, and so making the waste greater and greater.

The cure.

The prevention or cure for this euill, is diuers, as the affections of people, and customes of countreys doe instruct them, for some (especially the French-men) vse when they sow these graines or seeds, first to sprinkle it with the dregs or lees of their bitterest oyles, which when these deuouring foules doe taste, they refuse to doe any further hurt: Others vse to sow Pigeons dung or Lyme with their seed, which sticking vnto the graine, the vnfa- uourinesse thereof will make the fowle cast vp the graine againe, and leaue to doe further hurt: But forasmuch as these medicines cannot euer be had, nor are euer whole- some for every ground, the onely best and safest meanes to prevent this euill, is to haue euer some yong boy with bow and arrowes to follow the seeds-man and Harrows, making a great noise and acclamation and shooting his arrowes where he shall see these deuourers light, not cea- sing, but chasing them from the land, and not suffering them at any time to light vpon the same; and these ser- uants are called Field-keepers or Crow-keepers, being of no lesse vse and profit (for the time) then any other ser- uant whatsoever, nor is it sufficient to haue these Field- keepers for the bare time of seed onely whilst the graine is in sowing, but he shall also maintaine them till such time as you see the graine appeare aboue the earth, which for Wheat or Rye, because they are Winter-seeds, and so longer in sprouting will aske a full moneth, for all other seeds which are sowne in the Spring or Sommer, a fort- night is full sufficient; and this Field-keeper shall not faile to be in the field an houre before Sunne in the morning, and so continue till halfe an houre after Sun-set in the euening;

euening ; for at the rising and setting of the Sunne, is euer done the greatest mischiefe , for then all creatures most eager and hungry : and though the indurance may promise much paine and trouble, yet questionlesse the labour to any free spirit, is both easie and pleasant.

Also if your Field-keeper in stead of his bow and Arrowes doe vse to shoot off a Musket, or Harquebush, the report thereof will appeare more terrible to these enemies of corne, and the profit thereof will be a great deale more: for a shot or two of powder will saue more corne then a weekes whooping and shooting ; onely you must obserue that your Field-keeper vse no Bullet or Haile-shot, for so he may turne scarring to killing. Now touching the destruction which these creatures make of corne after it is stackt vp ; by tearing of the thatch, and digging holes and pits therein, to prevent that, you shall cause the Thatcher to scatter vpon the Thatch great store of ashes of any kinde or else Lyme, that as the Pigeons or Crows teareth vp the straw, the lyme or ashes may sparkle into their eyes and nards which they will not indure : as for those parts of the Stacke which cannot be thatcht, as the sides and ends ; vpon them you shall pricke diuers scarrecrows, as dead crows, or dead Pigeons, or any other rags, or the shape of a man, made either of thumb-ropes of hay or straw, or else some old castaway apparell stopt with straw, and so fixed on the stacke ; also in this case you may vse Clap-mills, or such like toyes which make a great noyse : But to conclude the best preuention for these creatures (if you want abilitie to maintaine a Field-keeper) is to take long lines of packthread, and in them to knit diuers feathers of diuers colours, especially white ones, and with a little stakes so to fasten them ouer the Corne, that with euery breath of winde the feathers may dance and

Additions.

turne

turne about, and the nearer that these Blinks or scarres come to the ground (when the corne is new sowne so much the better it is, lest the fowle finding a way to creep vnder them, begin not to respect them; so that a hand or two from the ground is sufficient, provided that the scarres and scars haue liberty to play and moue.

But if it bee to saue Corne in the ripening, that is to say, a little before it bee reapt, when the eare begins to harden, or when it lyeth in single sheafe vpon the land, for then fowle and birds doe as great mischief, as at any other season, it shall then bee fit that you raise these lines or scarres vpon higher stakes, so as they may play as much about the tops of the eares of corne as before they did about the earth: and amongst these scars thus made vpon lines in sundry parts of the field, you shall vpon other stakes place many other bigger scars, as dead crowes, pies, gleades, pigeons, or such like; as also the proportions of man formerly shewed you, or any ragges of cloth being blacke, foule, and vgly like bakers malkins, and than this there is no safer way for the defence of graine or corne from these birds; and such like.

Of Pismires.

The next great deuourers or consumers of graine are Pismires or Ants, which although it bee but a little creature, yet it is so laboursome, that the graine which they carie away or destroy by eating, amounteth to a great quantitie, and the mischief which these little Vermins doe, is after the corne is couered in the ground, and before it sprout, for they creeping in at the little chinkes of the earth, and finding the corne, either drag it out, or cate it; so that it cannot grow, and the graine which they most hurt, is all manner of white corne, especially your finest and smallest Wheat, for the skin or hull is thinnest, and the kernell whitest and sweetest: also to barley they do
much

much hurt, especially, that which is fullest and best, and likewise to Rye, Hemp-seed, Lin-seed, and Rape-seed; as for Oats, because it is double hull'd, and also your great hole straw wheat and Polard wheat which is thick huld, their hurt is not so much to them, and vnto pulse nothing at all, because they are too heauy, too thicke skinned, and too bitter in taste.

The best cure or prevention for these Pismires is to search your corne fields well, especially vnder hedges and old trees, and on the tops of moale-hils, and if you find any beds or hils of Ants or Pismires, presently after Sun-setting with hot scalding water to drowne the beds or hils, or with wet straw and fire to make such a smoake vpon them as may smother them to death, also if you measure your corne lands with ashes, lime or salt sand, you shall be well assured it will never breed Pismires.

The cure.

Next vnto these, your Dores, or great blacke Clockes are vehement destroyers of all kinde of corne both white corne and Pulse, whilest it lyeth dry in the earth, and before it sprout, for after it beginneth to rot, they doe no more touch it, and these Dores destroy it in the same manner, as the Pismires do, by creeping in at the small creuies of the earth, and finding the graine doe as long as it is dry feed thereon, and though they are no hoarders, or gatherers together of the graine, keeping it in heapes in dry places as the Pismyres and other vermine doe, yet they are great feeders thereon and that continually, besides they will euer chuse out the fullest and best corne, leaue the leaner, whereby they doe the Husbandman a double iniury, as first to deuoure, and then to deuoure but the best onely.

Of Dores.

The cure or prevention for these Dores, or blacke Clockes, is in Seed-time to make great smoakes in your
O
corne.

The cure.

corne-fields, which wil presently chase them from thence for they are the greatest enemies that may be to all manner of smoake: but if that bee not sufficient, then immediately before you sow your Corne, you shall very lightly sow your land with sharpe Lyme, and whensoever the Dore shall finde the smell or taste thereof, presently hee will depart, or if hee eate of the graine that toucheth the lime, it is as present poison vnto him, and he there dyeth.

**Of field Rats
and Mice.**

After these, your field-Rats and Mice are very vehement destroyers of all manner of graine or seeds before they sprout, especially all sorts of wheat, and all sorts of pulse, because for the most part those kinde of graines in many soyles are sowne vnder furrow, and not harrowed, so that the furrowes at first lying a little hollow, these vermines, getting in betweene the earth and them, will not onely deuoure and eate a great part of the graine, but also gather together great heapes thereof into their nests, as is often scene when at any time their nests are found, some having more, some lesse, according to their labours: And albeit in other soyles where the graine is sowne aboue furrow, and so harrowed in and laid much more close and safe, they cannot doe so much hurt as in the former, yet euen in these they will with their feet digge out the corne in great abundance, and though in lesse measure, yet doe hurt that is vnsufferable; so that to conclude, neither Rye, Barley, Oates, nor any other smaller and more tender seeds are free from their aunoyance and destruction.

The Cure.

Now the cure and preuention for these Field-Rats and Mice are diuers, according to the opinions of diuers authors, and diuers of our best experienc't Husbandmen: for some vse in the Dog dayes, or Canicular dayes when the
fields

fields are commonly bare, to search out the holes and nests of these Rats and Mice, which are easily knowne, being little round holes in the earth made so round and artificially as if they were made with an Auger, no bigger then the bodie of the Creature that was to lye in it: and into these holes they vse to put a few Hemlock Seeds, of which when the beast tastes it is present death vnto them: Others vse to sprinkle vpon the land, *Hellebore* or needling powder mixt with Barley meale, of which the Mice and Rats will greedily feed, and it is deadly bane and present death vnto them. Lastly, (and which is the best medicine) if you take a good quantitie of ordinary greene glasse beaten also, to powder, and as much Copporas or vitriall beaten also to pound and mixe them with course honey, till it come to a paste, and then lay it in the holes and most suspicious places, and it will neither leaue Rat nor Mouse about all your fields, but sodainely destroy them.

The next great destroyers of Corne and Graine, are *Of wormes,* wormes, and they destroy it in the sprouting, then when the ground hath rotted it, and the white or milkie substance breaking open the vpper huske, shooteth forth in little white threds at both ends, vpon which whilest it is so moist and tender the worme feedeth extreamly, and so deuouring vp the substance or sperm, is the cause that the corne cannot grow or get out of the ground, and these wormes being as it were the maine citizens within the earth are so innumerable that the losse which is bred by them is infinite.

Now the cure or preuention for these wormes is di- *The Cure,* uersly taken: for some Husbandmen vse, but onely to strike into the plow rest, and vnder the lowest edge of the shalbord certaine crooked spikes of iron of great
O 2 nayles

nayles halfe driven in, and turned backe againe, with which as the plow runnes tearing in the ground, and turnes vp the furrow, those pieces of iron kill and teare in pieces all such wormes as are either within or vnder the furrowes that the plow casts vp, and this is sure a very good husbandly practice, but not sufficient for the destroying of such a secret hurtfull vermine which is so innumerable, and lies so much concealed; therefore more curious husbands vse besides this helpe of the plow, to take oxen dung and mixe it with straw, and then to burne it vp in the land, making a great smoake ouer all the land, immediately before you plow it for seed, and it is thought that this will kill all the wormes which lye so hie in the earth, as to hurt the Corne; Others vse before they make either the mixture or the smoake to wet the straw in strong Lye, and then adding it to the dung, the smoake will be so much the stronger, and the wormes killed the sooner, or if you sprinkle strong lie vpon your seed before you sow it, there is not any worme that will touch the graine after: Also, if you take hempe and boile it in water, and with that water sprinkle your seed before you sow it, not any worme will come neare to touch it.

Of Rye not
to be wet.

Yet it is to bee obserued in this rule of wetting your seed Corne, that by no meanes you must wet your seed Rye, for it is a graine so warme and tender that it will neither endure cold, wet, nor stiffe ground, insomuch that the plowman hath a Proverbe, that Rye wil drown in the hopper, that is to say, it must neither be sowne on wet ground, nor in a wet day, since present shewers are apt to destroy it: lastly, it is thought that oft plowing of your ground in the wane of the Moone is a very good meanes to destroy wormes. Touching that practice which many vse, to gather the wormes from their lands at Sun-rise,

in

in bright dewie mornings, and Sun-set when the wormes couple about the earth, I hold it more fit for small gardens, then large Corne-fields.

The next great destroyers of Corne are Snailes, and Of Snailes. they destroy it after it is sprouted, feeding vpon the tender white threds and rions which start from the seed and would rise about the earth, being the stemme or stalk on which the eares should grow (were it not deuoured and eaten vp by these Snailes, and such like vermine) as soon as it begins to peepe vp, or as it were but to open the earth, whereby it is driuen backe and forced to die in the earth: for these creatures sucking vpon the tender sweetnesse, depriue it both of life and nourishment.

The cure and preuention for this euill, is to take the The cure. foot of a Chimney, and after your Corne hath bene sowne a weeke or ten daies, or within two or three daies after the first shower of raine which shall fall after the corne is sowne; you shall sow this foot of the Chimney thinly ouer the land, and not a Snaile will endure to come thereon: Others vse (especially in France and those more fertile Countries) to take common Oile lees, and after the Corne hath bene sowne and is ready to appeare about ground, to sprinkle it all ouer the Lands, by which meanes no Snaile or such like creature will endure to come neere the same.

The next great destroyer of Corne is accounted the Of Grasshoppers. Grasshopper, and he also destroyeth it after it is sprouted and appeareth about the ground, as the Snaile doth, but somewhat more greedilie, for he not onely feedeth on the tender white strings, but vpon the first Greene leaues that appeare also; by which meanes the Corne is not able to spring or bring forth a stemme or stalke to beare the eare vpon; or if it doe put forth anie, yet it is so small, weake

and wretched, that the eare growing on the same, is withered and leane, and the graine drie and blasted, and no better then Chaffe; nor is there anie Corne that scape the destruction of the Grashopper, for he generallie feedeth on all: First, on Wheat and Rie, because they are the earliest, then on the Barlie and Oates, and lastly on Pulse, vpon whose leafe and blossome hee feedeth whilest the first is sweet and pleasant, or the other greene.

The cure.

Now the cure or preuention for these Creatures, is according to the opinion of some Husbandmen, to take Wormewood and boile it well in water, till the strength of the Wormewood be gone thereinto, and then with that water in the month of May to sprinkle all your corne ouer when the Sunne is rising or setting: and not anie Grashopper will come neere or anoy the same. Others vse in stead of Wormewood to boile Centurie, and to vse the water thereof in the same manner as aforesaid, and find an equall and like profit in the same, but it is most certaine that anie bitter decoction whatsoeuer, vsed and applied as aforesaid, will not leaue one Grashopper about your Fields, for anie bitternesse is such an enemy vnto them, that they cannot liue where they feele anie taste thereof.

Of Moales.

The last offence of living Creatures belonging to corn or graine, are Moales, which not onely feed vpon it after it is sprouted and spindled by eating vp the roots thereof, and so consequently by killing the whole Corne: but also by their digging and vndermining of the earth, doe root vp the Corne and destroy it in most wonderfull manner, for where they make their haunts, or are suffered to digge, there they will destroy almost halfe an Acre in a day, neither make they choice either of Ground or Grain, for all grounds and Grains are alike, if the ground be

be not too wet, or subiect to inundation or overflows (as for the most part Corne grounds are not) for aboue all things Moales cannot endure wet ground or earth of too moist qualitie.

Now the best cure or preuention against these crea- The cure.
tures, is to find out their trenches and passages which are most plaine and easie to be knowne by the turning vp of the new earth, and digging crosse holes in the same, to watch either the going forth, or the comming backe of the Moale, and when you see her cast to strike her with an iron forke made of manie graines, as eight or sixe at the least, and so to kill and destroy them; which still is so generally knowne amongst Husbandmen, that it is become a trade and occupation amongst them, so that it needs no further description, and the rather in as much as for 3 d. or 4 d. a score, you may haue anie ground clen- sed of Moales whatsoeuer. Now there be some others which haue not this art of killing or catching of Moales, which onely doe take brimstone and wet stincking straw, or anie thing else that will make a stincking smoake, and putting fire thereto, smoake all the places of their haunts, and by that meanes driue them all cleane away from the corne-lands: many other practices they haue, but none so good, certaine, and probable as these already declared.

Thus far I haue spoken of those offences which pro- Offences
from the in-
fluence of
the heauens
ceed from liuing creatures, I will now intreat of these which come & grow from the Influence of the heauens, being malignant vapours which striking into the earth doe alter the sweet and pleasant nourishment thereof, and change it into bitternesse and rottennesse, whereby the Corne is either flaine outright, withered and made leane and vnkindly, or else the kernell turned to a filthy black- nesse, being bitter, drie, and dusty, like vnto smoake, which
the

Of smuttineſſe and mildew.

the Husbandman calleth smuttineſſe or mildewing, and yet this smuttineſſe or mildewing commeth another way, as namely by ouer-ranckneſſe, or too much fatneſſe of the earth, and this happeneth moſt commonly onely to wheat, for if blackneſſe happen to anie other Graine, it commeth of blaſtings or other malice of the Starres, for ranckneſſe of the ground in Barlie, Rie, or Oates, onely makes them lie flat to the ground, the ſtalke not being able to ſupport the multiplicity of the cares, and ſo by that meanes the graine wanting his true nourishment, growes light, withered, and of no validitie; now that this is moſt eaſie to be found out, the ranckneſſe of the growing corne, riſing as it were in cloſe bundles together, and the deepe blackneſſe of the greene blades will with ſmall trauell ſhew you.

The Cure.

This to cure and preuent, it ſhall be good before you ſow your Graine, to ſow your land lightly ouer with fine chalke, for that will abate his ouer-ranckneſſe.

Additions.

There bee other malignant qualities which proceed from the influences of the Heauens, or rather from the qualities of the Planets or Elements which doe manie dangerous hurts vnto Corne, as namely the Haile, the Lightning, the Thunder, and the Planet-ſtrooke or Blaſting, for all which the ancient Husbandmen haue ſuggeſted ſeueral Cures, as namely for the Haile, to plant the white Vine, or ſticke the branches thereof in the corn Field. For the Lightning, to cloſe a hedge Toade in an earthen pot, and burying her in the Corn field, or to hang vp the feathers of an Eagle, or a Seale ſkinne, or to plant Lawrell therein: For the Thunder, to ring Bels, to ſhoot off great Ordnance, or to burne ſtinking weeds in the Corne field: And for Blaſting, to take the farre horne of an Oxe, and mixing it with dung, to burne it in the corne-

corne-field, or to take the branches of the Bay tree, and to plant them in the corne-field : But in as much as all these, and manie other the like, smell rather of coniuration, charme, or exorcisme, then of any probabilitie of truth ; I will neither here stand much vpon them, nor perswade anie man to giue further credit vnto them, then as to the vapours of mens braines, which produce much manie times out of meere imagination ; and so I will proceed vnto those things which are of farre greater likelihood.

The next euill which happeneth vnto corne or grain, is that which commeth by frosts and sharpe nipping colds, which staruing the root, and binding vp all nourishment, maketh the corne drie, wither, and neuer prosper ; and then the violence of the frost, there is nothing more bitter to plants and seeds, for euer Rasor-like it cutteth the veins and sinewes in pieces, and as sharp needles pricketh the heart of euerie growing thing, for as the fire which is most hot, when it rageth, burneth and consumeth all things, so the frost which is most cold when it continueth, starueth and choaketh or stiflith whatsoever it imbraceth.

Of frosts.

Now the cure or preuention for those euils which doe happen to Graine by these great Frosts, is as some Husbandmen suppose, to couer the land ouer when it is sowne, with ashes, others spread straw or rotten litter vpon their corne, and not any of them but is sufficient to preuent the worst iniurie that the frost can doe.

The cure.

The most malignant qualitie which offendeth graine, is myst & fog, which being naughty vapours drawn from the infected parts of the earth, and falling vpon the corn, do not onely make the graine leprous, but also infecting

Mists and fogges.

the better earth alter the kindly nourishment thereof, and as it were distilling corruption into the veines, makes all that depend thereupon most leprous and vnwholesome, and thereby altereth the quality, quite turning sweetnesse into bitternesse, fulnesse into emptinesse, and goodnesse into badnesse, to the great losse of the Husbandman, and the much disreputation of the ground.

The cure.

Now the cure and prevention of this euill, according to the opinions of all the best Husbandmen, is to take weeds greene, the twigs of brambles, and other brush wood, wet straw or any such like stuffe, and binding them in great bundles, to put fire thereto, making a great and violent smoake, and then taking the advantage of the wind, to walke vp and downe the field and smoake it, which is thought a certaine remedie to take away those inconueniences which happen by violence and poison of these mysts and fogs.

Corne reapt.
wet.

Now to conclude the diseases and infirmities which happen to Corne whilst it is in the field, there is not any formerly spoken of more dangerous or of vilder qualitie then the reaping, mowing, or gathering in of Corne, wet or too greene, and vnhardened, for such moisture when the corne is either sheaffed vp close together, or stackt or mowed vp, forthwith gathereth heat, and either setteth the Corne on fire, or else the moisture being of lesse quantity, and not apt to flame, yet it corrupteth the graine and straw, and breedeth a stinking mouldinesse or rottennesse about it, so that the graine either becomes dung and durt, or at least so stincking and vnsauoury that it is good for no vse or purpose, as is daily seene where carelesse husbands gather in their graine without respect or gouernment, making the old Prouerb good, That haste euer brings wast.

The

The cure and preuention of this euill, is the well hus- The cure.
banding and managing of the haruest, as first with a care-
full and well iudging eye to looke vpon your corne, and
• to know by the hanging downward of the eare (looking
• as it were backe to the ground) and by the hardnesse of
the Graine, whether it be ripe or no; then to looke into
the cleannes of the corne, as whether it be full of greenes,
as grasse, weedes, and such like: or cleane of it selfe with-
out any mixture: if you finde there be many weeds mixt
with it, then you may reap it so much the sooner, though
the kernell be not so well hardned as you would wish, and
aboue all things haue a care neuer to sheare corne in the
raine or wet, no not so much as with the mornings or
euenings dew vpon it, but euen in the heate and bright-
ness of the day. Then hauing reapt your Corne so full of
grasse and weedes, you shall by no meanes sheafe it, but
spreading it thin in the Sunne, let the grasse whither all
that day; which when you perceiue to change colour &
grow dry, then binde it vp in sheafes, and let it lie single
a day, that the winde and Sunne may get into it, and dry
the greenes more sufficiently; then lay it in stouckes of
fixe or eight sheafes apeece, & turne the eares so inward
that the other bigger ends may defend them from all
raine, wet or dew that may fall vpon them; then a day or
two after, lay them in stoucks of twenty or of foure and
twenty sheafes apeece, and in those stouckes let them take
a sweat, then breake them open in a bright Sunne-shine
day, and letting the ayre passe thorow them to dry them,
forthwith leade the graine home, and house it or stacke
it in such sort as was shewed in the former Chapter, and
be sure the graine thus ordered and dryed can neuer take
hurt: but if the season of the yeare fall out so extraordi-
nary euill, and full of wet, that by no meanes you can get

your Corne dry home, (which, although it be seldome seene, yet it is possible to be seene) in this case you must bring it home as well as you can, and having your Kilne well ordered and bedded, you shall lay as many sheaves thereon, as it can containe, and turning and tossing them ouer a very gentle fire, by slow degrees dry them very perfectly as neare as you can, with no greater a heat then that which the Sunne giueth, and then moow and stacke them vp at your pleasure, for the ayre will sweeten them againe, and take away all smell of smoake or other annoyance: onely obserue, not to stacke them vp whilst the fire or heat is in them, but when they are cold, and so they will be as sweet as may be.

Of Corne
washt.

Now it is not amiss that I speake here a word or two of washt corne, or the washing of corne; True it is (as before I haue written) that all sorts of Wheat whatsoever are subiect, either by the rancknes of the ground, blasting, or else myldewing, to a kinde of filthy sooty blacknes, as is already shewed; and this sooty Corne is taken two wayes, generally and particularly: generally, if the whole land be stricken, and no corne saued, but all spoiled, which is called mildewed: or particularly, where but some certaine eares are stricke, or some certaine part of the graine, as when it is blacke at both ends, yet full and sound in the midst, and this is called smutcht Corne, being disfigured in part, and not in all. This smutcht corn which is stricken here and there, if the blasted eares be not culled out from the other, (which to doe is an husbandry exceeding good and very worthy) when it cometh vnder the flayle, the dust of those blacke blasted eares will so foule all the rest of the corne, that it will looke blacke and ill-fauoured, and so become vnseruiceable and vnmarketable, for the blasted corne is both bitter and vnwholsome;

wholesome: In this case you must of force wash this corne, and you must doe it in two or three waters, till you see all the blacknesse quite gone; which done, then draine away your water cleane, and laying the corne on faire window-cloathes, or couerlids, lay it in the heat of the Sunne, and so dry it againe till it bee so hard that it will grind: But if the time of the yeare will not serue for the Sunnes drying it, then you shall dry it on a kilne with a very soft and gentle fire, and then coole it in the ayre to recouer the sweetnesse againe, and then the corne is as seruiceable as any other, onely for seed it will by no meanes serue, both by meanes of the blasting, which makes the kernell imperfect at both ends, where it should sprout, also the too much drying therof, by which it is so much hardened that the ground hath not strength to resolue it, therefore it is the office of euery husbandman when he chuseth his seed-corn, to eschew by al means this washt corne as a graine that is lost in the earth, & wil by no meanes grow.

Therefore that you may know washt corne from all other corne, and so not be cozened by any deceit in the ill husbandman, you shall take it vp into your hand, and if the corne looke bright, cleere, and shining, being all of one entire colour without change or difference, then bee sure the corne is vnwasht and perfit.

But if you finde it looke whiter at the ends then in any other part of the corne, and that the whitenesse is blacke and not shining, so that there is a changeable colour in the corne, then be assured that the corne is washt, and then by no meanes apt for seed or increase.

Againe, put three or foure graines into your mouth and chaw them, and if then the taste bee sweet and pleasant, and grind mellow and gently betweene your teeth; then is the corne not washt, but if it haue a bitterish, or fleshy

taste, and grind hard betweene your teeth, or with much roughnesse, then hath the Corne beene washt and dried againe, and is not good for seed: also when corne is more then ordinarily moist, or more then ordinarily dry, both are very ill signes, and shew either imperfect Corne, or imperfect keeping, for the best and good Corne indeed euer holdeth an indifferent temperature betwixt drinesse and moisture.

CHAP. XVIII.

How to keepe all manner of Graine, either thrasht or vnthrasht with least losse the longest time, and how to preserve it from all infirmities and vermine in the house or garner.

Keeping of
corne two-
fold.



SO proceed to the keeping and preserving of Corne and Graine, it is to be vnderstood that it is to be done two seuerall wayes; that is to say, in the eare and out of the eare, in the stack when it is ioyned with the Straw & Chaffe, or in the Garner when it is clenfed and dressed.

Keeping
corne in the
eare or in
the chaffe.

Touching the keeping of Corne in the Eare or in the Stack, there is no better or safer way then that already described in the sixteenth Chapter, being free from all off-fences whatsoeuer that can come to hurt it.

Now there bee others that cut off the eares of their Corne, and then put them into great Chests or Hutches of wood, (such as are very frequent and much in vse in Ireland and other Countries where warre rageth) and so keepe it sweet and good many yeares: Others vse to beat it out of the Eare, but not separate it from the Chaffe, and then laying a leare of Strawe more then a foot thicke, to lay a good thicke leare of the thresht corne, then another leare of Strawe, and so a leare of thresht Corne,

Corne, and thus lay leare vpon leare, till you haue made vp your Stacke, in such proportion as you shall think conuenient; and this will keepe all kind of Corne, or Graine, or other seeds, sound, sweet, and fit for any purpose, at least a dozen yeare, or more, as some haue supposed, without either too much drying, withering, moistening or molding; and sure this is a very excellent way for the storing vp of much Corne in a very little roome, and may as well be done with corne as with strawe: onely it is not to be done in Barne nor House, because Mice, Rats and other kinde of Vermine will worke much destruction therevpon, but on a Stacke or Hovell made and proportioned in such form as was shewed before in the sixteenth Chapter, and so it will stand safe without all annoyance, as long as it shall please the owner to keepe it; sure I am it will last thus fully twelue yeares, yet some Authors affirme it will last fiftie yeares, but that is a space of yeares beyond my tryall.

Touching the keeping of Corne after it is thrashed and drest, it is diuers wayes to be done, as by stoege or place of leare, as garners, hutches, and such like: by labour and industry, as with the shouell: or else by device or medicine.

Keeping of
corne out of
the Eare or
drest.

For Garners, they be made diuers wayes, according to the nature of the Country and custome of the people.

Of Garners.

Some are made with clay and some troden with haire, straw chopt, and such like: but these are the worst and doe soonest corrupt Corne, for although they are warme, which is a great preservation to Corne, yet they yeeld dust, and from that dust is bred fleas, myres, weaues, and other vermine which spoile corne, and make it easily rot.

Others are made of stone and lyme, but they are subiect
against

against wet weather, to yeeld forth a moist dew which corrupteth and rotteth corne.

Others are made of Bricke and Lyme, and they are very good against the weauell and other small Vermin, but the lyme is sharpe and so consequently very vnwholesome for all manner of Graine. The best Garner then that can bee made to keepe all manner of graine in, is made of plaster, burnt and brought into mortar, and so raising it vp with the helpe of small stones hidden and placed in the middest of the wall, to make both the inside, and the outside of the Garner of smooth plaster, no stone being scene but hidden at least two fingers thicke on each side, and all the bottome also must bee made of plaster; for no floore keepeth corne so well, of what kinde so euer it be, and these Garners would be placed as neare as you can to the backs or sides of chimneys, or as neare the ayre of the fire as you can conueniently, for as there is nothing more cold then plaster, yet is it euer so dry and free from moysture, that with no change of the ayre or weather it relenteth, but keepeth the corne euer in one state of goodnesse, whilst the warme standing thereof is such a comfort in the Winter, and the naturall coolnesse of the thing so soueraigne in Sommer, that the graine euer abideth in one state without alteration.

Of hutches.

Now for hutches or great chests, byngs, dry-fats, and such like, they are made of old dry and wel-seasoned oake-boards, plained smooth, and close ioyned and glewed together, with couers & lids made also very close, whereby litle or no ayre can come in: Some of these great byngs or hutches made of dry boards are made open and without couers, but they are not so good, for the ayre cooling the vpper part of the corne, & the middle part sweating,

ting, breedeth corruption, or mustinesse, which hurteth and spoileth the corne: besides, they are somewhat too warme, and thereby make any greene corn apt to corrupt and smell.

Touching the vse of Garners and Hutches, they are principally to keep malt after it is dryed, or Barley which is for the vse of bread or meale: and here is to bee noted that the best manner of keeping malt, is to keepe it in the come, that is to say, in the dust and other filth which cometh with it from the kilne, as thus, when first you lay your malt on the kilne to bee dryed, you know there is at one end a certain sprout or smal threds which growes frō the corne, & is called the come, which by the rubbing and drying of the malt fals away, and leaues the corne cleane and snug of it selfe, and when you trim & dresse vp your malt for the mill, is winnowed & cleansed away: this you shal preferue & put al together into your garner or hutch, which will so mellow & ripen your malt, that in the spending thereof a pecke will goe further then a pecke and a halfe kept of a contrary fashion, & although some are perswaded that this come or malt dust, is a great breeder of the worme or weuell, by reason of the much heat thereof, being indeed of the purest of the hart of the corne; yet it is not so vnlesse some dankenesse or moisture doe get to the corne, and then it breeds weuels in infinite abundance, and therefore by all meanes bee sure that your garners and hutches doe stand exceeding dry, and then there is no feare of the losse of corne, nor shal you need to dresse or winnow your malt but as you spend it.

Lastly, here is to be noted, that although I here ioine garners, hutches, chests and byngs together, yet I make them not all of equall goodnes: for the plaster garner is absolutely the best of all, the close hutch or chest next, and

The vse of
Garners and
hutches for
malt.

the open bin last; yet any or all sufficient enough to keep malt, barley, or small seeds, diuers yeares without imperfection.

It is written by some of the ancientest Authors that wheat hath beene kept in these close hutches or chests sweet, the space of fiftie yeares, yet I hold the rule somewhat doubtfull, both because wheat of it selfe lying so close packt together, is apt to heat and sweat, and that heat commonly turneth to faughtinesse, and the sweat to corruption; but that it may thus be preserved frō worms, weauels, myres and other vermine, breeding in corne, it is doubtlesse and infallible.

To preserve
Wheat.

Now for the preservation of wheat, which is the most principall graine, of greatest vse, and greatest price, and therewithal most tender, and aptest to take hurt: the experiments are diuers as mens fancies & practices haue found out, for some husbandmen hold opinion, especially the French and Spanish, that if you take the lees of common oyle (so it be sweet) and sprinkle it vpon your wheat as it lyes, either in the garner, or vpon the floore, that it will preserve it from all corruption and annoyance whatsoever, nor doth it saue wheat only, but all other manner of graine whatsoever; nor doth preserve corne alone from mischief, but if corne by casualtie be tainted or hurt, it doth recouer it againe, and brings it to the first sweetnesse; and if either wormes or weauels be bred in it, the oyle presently kils them, and makes the corne free from that mischief: as for smaller seeds, as hempe, linc and rape, this oyle doth not onely keepe them long and sound, but also feeds and nourishes them, and makes them better, either for the ground, or for vse either in the mill or in medicine. There be others that vse to take chalke, and beat it to powder, and then scatter it amongst their wheat,

wheat, when they put it into the garner, & haue found that thereby their graine hath beene wonderfully preserved from all imperfection, and surely there is great reason for the same, because the driness of the chalke drinketh vp the moisture which sweateth from the graine, and is the first breeder of all putrifaction: also it cooleth and asswageth the immoderate heat which is ingendred in the corn by reason of the packe and close lying together. Again, there bee others which vse to lay great store of wormewood amongst their wheat, which likewise preserueth it from all annoyances, especially from worms and weauels, as also from Mice, Rats, and such deuouring vermine; neither will the Corne corrupt or grow faughty, as long as the wormewood remaines amongst it: in Italy the careful Husbands vse to take a certaine dry earth or clay, called earth of *Olnithus* or *Cernithus*, and this earth they beat amongst their wheat, and then put it into the garner or hutch, and it will keepe it sound and sweet diuers yeares together; then when they haue occasion to vse it, with small reeing siues to dresse it from the Corne, and so preserve the dust, which will last and serue you many yeares together, euen almost an age as some have reported, and is at this day to be seene in many parts of Italy and other places.

Again, I haue for mine owne part seene in the Islands of the Azores, certaine very great and large caues or pits made vnder the earth, of the fashion of a Spanish earthen Jarre, that is to say, great and spacious in the midst and narrow both at the top and bottome, like a brasie pot or great glasse vyall, and made as smooth within as may be, and in these caues or pits, they first lay chaffe, and then their thrasht wheat filling it vp full to the top, or within a handfull thereof, which they fill againe with chaffe,

and then closing the top with a broad stone, they couer it ouer with earth so close and vnperceiuable, that you may walke or trauell ouer it without any suspition ; and for mine owne part , I haue my selfe digged vp many of these pits, and found great store of wheat, both in the high- wayes, and other most insuspicious places , and surely it is thought , and experience in those places makes it good, that in these caues or pits you may keepe wheat as long if you please as *Pliny* speaketh of, which is an hundred or an hundred and twenty yeares without hurt or putrifaction either of heat, moisture, wormes, weauels or any other vermine whatsoever which consumeth or deuoureth Corne ; yet how I may recommend this experiment to our nation I am vncertaine , because the much moisture of our climate , and the cold rawnesse thereof promiseth a contrarie effect; for the great enemies vnto graine , are violent cold and moisture , and with vs it is very difficult to make any cauerns vnder the earth but they must bee subiect vnto both : therefore onely to those which liue in hot sandie countreys high and free from springs or waters , or in dry and rockie grounds, where these mynes or hollow places may be hewed out , as in a maine and firme quarry, I recommend the tryall of this practice, with this assurance, that where the ground is fit for this purpose , as in any of your sandgrounds or grauelly earths , as in Norfolke, Middlesex, Kent, and many other sandie climats ; or in rockie situations as in Nottingham, Bathe, Bristol, and such like, you may keepe your wheat, good, sound, firme and free from all annoyances , euen as long as you shall please to keep it, both without putrifaction in it selfe , or waste made by other deuouring worms and vermine: but if in a more moist place, as in a clay or other mixt earth
which

which euer is vomiting wet and dewish humours, you are forced to approue this experiment: then you must necessarily lime all your caue or hollow myne within, at least halfe a foot thicke with tyle shred and plaster laid wall-like together, and then the plaster dawbd at least three fingers thicke aboue all, and so you may keepe your Corne as safe and as sound as in any hot soile whatsoeuer, but without it your corne will not endure a weeke without rottenness, faughtiness, mouldiness, and stinking.

To conclude, hauing shewed you all the most approued and best experiments for the keeping and preserving of Wheat, there is not any better, or so good as this poore silly plaine one which I will here deliuer: And that is, first (as neare as you can) reape your Wheat at the Change of the Moone, for Wheat which is so reaped is seldome or neuer subiect to losse or putrifaction (being gotten dry, and in husbandly manner ordered and handled) because that celestial body hath such a power and influence in the growth of Corne and seeds, that as shee groweth so they grow, and as she waneth, so they abate and wither. And truly for mine owne part, in my poore husbandry, I haue made this obseruation, that I haue reaped corne at the beginning of the wane (to mine eye and iudgement) great, full, and bold (as the Plow-man calls it) and within few daies after, when it came to thrashing, I haue found it most poore, hungry, and small corne: nor could I giue or find any other reason for the same, but that it was reaped in an ill and most vnseasonable time: for on the contrary part, I haue euer found that corne reaped vpon the Change, being ripe, full, and euery way fit for the barne (and the weather faire and dry aboue head) it hath neuer altered, but kept his first and perfit goodnesse, so that I cannot chuse but in this case thinke the obseruation of

the Moone to be a thing of great effect and validitie, appointed by God as a second meanes for our help and profit: when therefore you corne is thus seasonably and well got, you shall thrash it, winnow it, and dresse it so cleane as you can, then carry it vp into your chambers, or lofts appointed for that purpose, and whose floores by all meanes I would wish to bee cast of the best plaster; for boards are too hot, and clay is too apt to breed vermine: On this plaster floore you shall spread your wheat, not about a foot thicke at the vttermost, and so let it lie: observing once in foure or in five daies at the most, with a large wooden shouell, to turne the Wheat quite ouer and ouer. And thus doing you shall be sure to keepe it as sweet sound and good, as when it first came into the barne: for neyther can the heat, sweat nor coldnesse offend it, the first being cooled and tempered by the opening and dispersing; the second dried vp by the ayre which hath free recourse into it, and the last comforted by the labour and tossing of the shouell, casting it vp and downe from one place to another; and though some curious Husbands may obiekt that this manner of keeping corne dryeth it somewhat too much, and thereby disableth it for some particular purposes, as for seed, and such like; yet in that they are much mistaken; for this stirring and mouing of Graine, is not a drying of it, but rather a great comforter and strengthner of it, dispersing backe into the Corne, those wholesome vapours which should doe it good (by way of communication and fellowship with the Graine) and expelling those ill humours which sweating out of it would otherwise confound and hurt it, so that in conclusion for the true and long keeping of wheat sweet, sound, and perfit, without losse or corruption, there is no way more safe or easie, then this last expressed, being
of

of all other the best, although in shew it appeare sleight and triuall, as for the most part things of greatest moment in this nature doe; but to the iudicious Husbandman I referre it, whose aime is at the worth and substance, not at the words & curious glosse, set forth in strange ingredients. Touching the keeping of Rye or Masline, or as some cal it munck-corn or blend-corn, being part Rye, & part wheat mixed together, that which preserveth wheat will also preserve it, for they are Graine of like nature, onely the Rye is somewhat hotter and dryer, and therefore will endure somewhat more moisture; yet to speake particularly touching the preservation of Rye, there is nothing better then the Plaster floore, and oft turning; the close Hutch is also exceeding good, so is the Pipe or Dryfatte, but being once opened, and the ayre entring into the Corne, except it be soone spent, it will soone putrifie, for though in the close keeping it last long, yet when it comes to the ayre it quickly receiues taint. Lastly, for the profit in keeping of Rye, indeed there is nothing better then to ply it and tread it hard into dry vessels or barrels, wherein salt hath beene much ledged, or other brine or salt matter: provided alwayes that the vessels be sweet and vntainted, no wayes subiect to faughtinesse, or other vsauorie smells, from which there is no preservation.

To preserve
Rye.

Concerning the preservation and keeping of Beanes, which are indeed a more grosse and fatter graine then any heretofore written of, and out of the fulnesse of their substance, more subiect to moisture & those dankish humors which corrupt Corne: the carefull husbandman obserueth two rules; first, not to thrash any Beanes or Pulse, more then for necessarie vse (as for the Stable or Mill) before it bee midde March, at which time the Graine hauing

To preserve
Beanes.

having taken a kindly sweat in the Mow, Stack, or Houell, is become so dry, firme, and solid, that no floore, wall, or other place of leare, can make it relent or giue againe, (except great abuse and too moist keeping :) for it is to be vnderstood, that this sort of Pulse or Graine is of it selfe so exceeding moist and apt to sweat in the mow, that all Husbandmen endeavor by no meanes to house it, or lay it within doores, but seeke to make it vp in Stacks and Houels without doores ; not so much that house-roume is wanting, as that the benefit of the Sunne and Ayre which pierceth through the same, dryeth and ripeneth the corne in such kindly manner, as maketh it as seruiceable as any other : and indeed, the first inuention of Stacks, Houels, Reekes, and such like, did not spring so much from the want of housing, as from the good and profit which the Husbandman found to accrue to this kind of Graine onely by reason of laying it abroad ; for it is certaine, that Beanes and Pease neither grow together, nor ripen together, but put forth their encrease one after another ; for you shall see vpon one Stalke, bloomes, swads, and ripe cods : so likewise in the gathering of Pulse (when it is reaped from the ground) you shall see some dry & withered, some ripe, some halfe ripe, some absolutely greene, and as but new in growing.

Now all these must be reapt together, and if you stay them in the Field till all be of like drynesse, questionlesse the oldest wil shake and shed vpon the ground before the youngest be ripened, and what that losse will redound to, euery Husbandman can iudge ; so also to house and mow vp in close mow, the dry pulse with the greene, surely the greene cannot chuse but inflame and heat the dry, and the dry so heated, giue fire to the greene till both be either rotted or consumed : and hence it came, that

that expert husbandmen deuised to lay their pulse for the most part euer without doores in stackes, reekes, and houels, that the Sunne and wind passing thorow them might bring all the graine to an equall drinesse and hardnesse.

Againe, Pulse being of all Graine the coursest and fullest of substance in it selfe, and the straw euer big and substantiall, and full of broad thicke leaues euer moist and sappie; it must needs follow that this Graine must euer be most apt to sweat in the mow, and so necessarily craueth the greatest store of ayre, and the longest time in drying; so that to returne to my first purpose, it must needs follow, that no Beanes or Pease can be fully ripe or seasoned in the mow, till it bee mid March at the least; for it is an old saying amongst the best husbands, *That March wind is a salt which seasoneth all Pulse*: And if vse or necessity compell men to thrash their Pulse before that time, the graine is so imperfect, that of force it must bee kilne dried, or els it is fit neither for the vse of bread nor prouender.

Now herein is to be vnderstood that Pease or Beanes which are kilne dried, may bee kept sound, sweet, and good, either on plaster floores, boarded floores, or earthy floores, the space of many yeares without turning or tossing; nor need you to respect how thicke the heape lye, since Beanes after they are once dried on the kilne, or in the Sunne, neuer after will thawe, giue againe, or relent, but remaine in their first soundnesse. But if you preserve you Beanes for other vses, as to boyle in your pot, and feed your seruants withall, as is vsed in Somerset-shire, and many other Westerly parts of this Kingdome, then it shall bee good for you to take oyle barrells, oyle caske that is sweet, and first chalke them all ouer within and without with ashes, and then put your Beanes therein, and close

vp the heads, and as it is affirmed by diuers great Authors of Husbandrie, it will keepe Beanes sound, sweet, and good, twentie yeares: nay, some giue instances of Beanes which haue beene thus kept and presrued the space of one hundred and twentie yeares; and surely I am perswaded, that if Beanes bee well and dry got, and thrasht at a seasonable time of the yeare, as in March or Aprill, that then thus kept, they will last the vitermost of a mans pleasure.

Preseruing
of Pease or
Fetches.

Now for the keeping and preseruing of Pease or Fetches, which of all other Graine whatsoever, is most subiect to rottenesse and imperfection, because out of it owne nature it is apt to breed wormes, weauils, and mytes, by reason of the much lushious sweetnesse of the kernell of the Graine; you shall in all things obserue the same courses that you do with you Beanes, both touching your gathering, drying, stacking, and also thrashing, for as they are most aptest to grow together being neere of nature and condition one to the other, so it is fit that vnto them you do applie one and the selfe-same medicine or remedie.

And herein is to be noted, that as Pease are of more generall vse then Beanes, as for Horse-prouender, feeding of Swine, Pigeons, Pullen, and such like; as also for bread, pottage, to boyle with or without meate, for certainly it is a most wholesome and strong food as may bee seene by the people of Deuon-shire, Cornwall, and Somerset-shire, to whose great strength of bodie not any reason can bee giuen more probably then their much feeding on this Graine, and their acquaintance with much and strong labour, so they ought with more care and circumspection to bee preserued from all those annoyances that naturally are apt to hurt them,

as

as wormes, rottennesse, mould, mustinesse, and such like.

And first, there is nothing better for the long and well keeping of Pease, then the very well drying of them, eyther in the Sunne or on the kilne, especially those which you vse for bread, prouender, or feeding of Swine: and although some Husbonds vse to feede Swine with vndryed Pease, nay many times both vndryed and vndrest, that is to say, the Pulse or Chaffe not taken away, and are of opinion, that the Graine so giuen, sooner feedeth and puffeth vp Swine then the other, yet they are deceiued; for albeit it swell and puffe vp a beast, yet is the flesh and fatte neither so good, sound, and long lasting, as that which is gotten with drie foode, nor doth it make a Swine so thirsty, and the Husbandman as euer assured that when his Swine drinks not well, he feeds not well; therefore what Pease you keepe for bread or feeding of Cattell, by all meanes dry them well, and lay them either in Garners or Floores, and they will last sound and good without breeding worms or weuills, as long time as you please. But those which you keepe for foode at your owne table, as in pottage, or other vses, which must by no meanes bee too much dried, because then they aske a double time in boiling, and spend a double quantity of fuell in their preparing. Some vse after they bee cleane thrasht and drest, to lay them in a coole close Garner, either of Plaster, Earth, or Boards, of which, Plaster is the best; as for any thing that relenteth or yeeldeth moysture, as Lime, stone walles, or such like, it is most hurtfull, and immediatly maketh Pease mould and rot: also it is good to lay your Pease in thicke heapes in your garner, for that will preserve them moyst the longest time, but to spread them thin vpon the floore, by which meanes

the Sunne, Ayre, and Winde may passe thorow them, is not so good, for it drieth them too sore, and taketh from them much of their sweetnesse and goodnesse, which ought most carefully to bee preserved. There be others which preserve these tender meat Pease by thrashing them vp, and then letting them lye in their owne pulse or chaffe, and not dressing them but as they haue occasion to vse them, and questionlesse this is a very good and laudable way, for the pulse or chaffe doth maintaine them sweet and moist, and yet keepeth them withall so warme and comfortable, that they last much longer then any other way whatsoeuer, and in this manner of preserving Pease is to be noted, that by all meanes you must let them lie vpon a dry earth floore, so long as they are in the chaffe, rather then on the boards, or on plaister, and yet in this case the boards are better then plaister.

Lastly, and which indeed is the best experiment of all other, if you intend to keepe Pease any extraordinarie long time, you shall take Barrells or drie Caske, well and strongly bound, and pitch them within exceeding well, with the best pitch or bitumen that you can get, and then sprinkle the pitch all ouer with strong vinegar, then take your Pease, being cleane and well drest, and put them into the Barrells, pressing them downe close and hard, then head vp the Barrells, and let them stand drie and coole, and they will preserve your Pease sound, sweet, and good for any vse whatsoeuer as long as you please, be it for ten, twentie, or thirtie yeares, according to the opinions of auncient Husbandmen, and other prouant Masters that haue liued and commaunded in townes besieged, and townes of Garison; neither shall any worme, mite, or weauell, euer breed in it, or offend it, nay if any haue in former
time

time beene bred in them, this manner of keeping the Graine, killeth them, and destroyeth them for euer.

Now there is another sort of Pulse which are called *Preseruing of Lentils or Lupins.*
Lentils or Lupins, which albeit they are not so generally vsed for the food or sustenance of man, yet they are for horse, swine, and other cattell as much in request as any Graine whatsoever, and indeed doe feed fatter and sooner then other ordinarie Pulse, and the flesh so fed is sweeter and pleasanter both to the eye and to the taste, then that which is fed with Beanes or Pease; also they are a Pulse very Physicall and good for many medicines, as may appeare by the workes of many learned Physitians; and these the longer they are kept, the better they are, and fuller of profit. To preserve them then in good and sound estate, it is meete to reape them in very faire weather, and to Stacke them vp exceeding dry, and if they be laid in the Barne, or any close house, it is not amisse, for they will endure housing better then any other Pulse, yet the sooner you beat them out of the straw, or thrash them vp, the better it is, for husbandmen suppose there is no greater hurt to this kind of Graine, then the long keeping it in the straw; for it is of such rankenesse, that the very straw and cods breede in it much putrifaction; and I my selfe obserued both in Spaine, and in the neighbour Islands, where is great abundance of this kinde of Graine, that they doe no sooner gather it and bring it home, but immediatly they thrash it; nay, some thrash it in the fields vpon the lands where it growes, and so bring it home, then spread it on faire boarded floores in very great heapes, or els lay it vp in close hutches, or bings, such as Wheate and other white graine is to be kept in. If you drie this kind of Pulse in the Sun, or vp-

on a kilne, with a very moderate and soft fire, and then lay it vp either in close garner, or close hutch, it will last many yeares sound, good, and without corruption; there be other Husband-men which mixe with this graine when it is thrasht, a halfe part of hot, dry, white sand, or at least couer the whole heape of Pulse with the sand, and do find that it keepes the graine very sound and good many yeares together. But to conclude, if you take strong vinegar, and a good quantity of *Lacerpitium*, and dissolue and mixe them very well together, and then hauing laid your lentils or lupins together on a faire boarded floore, in large, broad and flat heapes, about two foote, or two foot and a halfe thicke with the vinegar and *Lacerpitium* sprinkle ouer all the heape, and not any change of weather, frosts, wormes or other vermine shall doe them hurt, but they shall remaine sound and good as many yeares as you please to keepe them. There are other husband-men that in stead of this before rehearsed, take onely sweete oyle, and sprinkle it all ouer the graine, and find the same vertue and effect, for neither wormes nor other vermine, will touch it, nor will the radicall humour thereof at any time waste or decay, but remaine strong, full and sound without any kind of diminishing, nor shall you find any abatement of it, or shrinking in the measure, but that which was a bushell, this yeare will bee also a bushell the next yeare, and as many yeares after as you please; which is no small profit to the owner: whereas on the contrary part if the graine bee either dryed in the Sun, on the kilne, or by the wind, you shall hardly haue of euery such bushell so dried, three pecks and a halfe againe, which is by computation at euery quarter which is eight bushels, full one bushell lost, and yet this Pulse thus preserved as before said, shall bee as good for any

vse whatsoeuer fit for such Corne to be imployed in, as any other dried graine whatsoeuer, & yeeld as much euery way, and altogether as good meale, and as good meate.

Now touching the preserving and keeping of Oats, it is to bee vnderstood that of all Graine it is least casuall, because of it selfe naturally it breedeth no euill vermine, and is againe preserved and defended with a double husk, whereby neither cold, moysture, heate, nor drinesse is able so soone to pierce and hurt it as other graines which are more thinne clad and tender, yet because it is of great and necessary vse both for cattell and pullen, and that neither the Husband nor Houswife can well keepe house without it, you shall know that the best way to preserve it longest, is, after it is thrasht to dry it well either in the Sunne or on the kilne, and then either put it into close Garner or close caske, and it will keepe many years sound and sweet.

Preseruing
of oates.

Touching the preserving of Oate-meale, which is the inner kinnell of the Oates, and a graine of most special vse in the husband-mans house, as in his pottage, in his puddings, and in many other meats necessarily vsed for the labouring man; It is an experiment not altogether so curious as any of the rest formerly written of, for no Oatmeale can be made, but the Oats must be exceedingly well kilned, dried, or else the kinnell will not part from the hull, and being dried, as is fit, that drying is sufficient to keepe and preserve the Oatmeale diuers yeares: provided euer that presently after the making of your oatmeale, you put it into dry close caske or dry close garner (but caske is the better) and so as it may remaine exceeding dry (for any thaw or moisture corrupts it) & as neare as you can let it haue, if it be possible, some ayre of the fire, for the warmer it stands, the better and longer it will last as experience sheweth.

Preseruing
of oatmeale.

For

Preseruing
of any meale.

For the preseruing or long keeping of any sort of meale, there is no better way then first to boulte and searse him from his bran, for the branne is very apt to corrode and putrifie the meale, and to bring it to a faughtinesse or mustinesse, then into very sweet and cleane dry caskes close and well bound, treade in your meale so hard as you can possible tread it, and then head it vp close, and so you may keepe it either by land or water as long as you please, and when you haue any occasion to spend of it, be sure to loosen no more of the meale then you presently vse, for the faster and closer the meale lyeth together, the longer and sweeter it will last, for it is the gathering in of the aire that onely corrupts it.

And here is also to be noted, that you should not presently assoone as your meale is ground, boulte it from the bran, but rather let it lie a weeke or fortnight, in the bran in some close bing or trough, and then after that time boulte or searse it, and you shall finde it to afford you in euery bushell, more meale by at least halfe a pecke then if you should boulte it presently assoone as it comes from the myll, whence it proceedes, that the cunning and skilfull Baker will euer haue a weeke or fortnights prouision of meale before hand, which lying so long in the branne, payes double interest for the continuance.

Now if it fall out so, that either by trade of Merchandise, or other occasion, you buy any meale by way of transportation which is caskt vp (as much meale is sould by the barrell) you shall then presently as soone as you haue bought it (if it bee for your owne vse or expence) breake open the heads and empty the meale vpon faire sheets on a cleane floore, and then spreading it abroad, let the Sunne and Aire passe thorow it which will dry vp the sweat, and if there bee any taint or faughtinesse, take it away,

away, and bring the meale to his first sweetnesse, and then immediately boulte out the course branne, and after as was before declared, tread it hard into fresh and sweet caske : and thus you may keepe your prouision of meale all the yeare long ; nay, if need require two or three yeares, for after the first sweat is taken away and kindly dried, there is no doubt to be made of any that shall follow after.

Lastly, touching the preseruing and keeping of all manner of small seeds of what nature or qualitie soeuer they be, whether hempe, line, rape, mustard-seed, or any other garden-seed whatsoeuer, though truly and properly they last neuer aboute one yeare, nor are fit for seed or increase after that date expired, yet in as much as they are medicinable after, and a much longer time, therefore you shall vnderstand that the best way to keepe them safe and sound, and the fittest for vse and profit, is first to gather them as soone as you perceine them to bee ripe, and the weather being bright, cleare and dry, then shall you dry or wither them in the shade and not in the Sunne, especially vpon a plasterd-floore, where the light looketh to the South, and be sure that as little Sunne and moisture come to them as you can, for both are maine enemies ; which done, bind them vp in bundles without thrashing, and so hang them vp and keepe them in their owne cods, and they will last for all vses, a full yeare, and for some particular vses two or three yeares ; and in this manner you may also preserue all manner of hearbs, weedes, flowers, roots, and the barkes or rinds of all manner of trees.

Preseruing
of all small
seedes.

CHAP. XIX.

How to keepe Graine, either for transportation by Sea, or for use in a towne of Warre or Garrison, from one yeare, to one hundred and twenty.

The vse of
Graine,
Pulse at Sea.



Of Rice, and
the vse.

Of speake of the Graines and Pulses which are meetest for the sea, and their severall vses.

It is to be vnderstood that the best and principallest Graine which is indeede both most sweete, most fresh, most pleasant in taste, and most long lasting, is Rice, which although it grow not much in our kingdome, but that wee are beholden to our good neighbours for the trade thereof, yet it is in such plenty, where we fetch it, that wee neede neither complaine of the scarcity nor the cost, and so much the rather in that a pecke thereof will goe further then a bushell of any other Graine; of this Ryce is made many good and wholesome dishes, some thicke, some thinne, some baked, some boyld, as thus: if you take a quarter of a pound of Ryce, and boyle it in a pottle of water, till it come vnto an indifferent thicknesse, and then put into it a good lumpe of ported or barrelled butter, and as much suger as shall salt-wise season it to an indifferent sweetnes, it is a dish of meat, meet for an Emperour at Sea, wholesome, good, and light of digestion, and wil bee as much as foure reasonable men can well eate at a meale; for the nature of the Rice it such that it will swell in boyling and grow to that bignesse, that in an instant it will thicken a pottle; some vse the night before they boyle it, to steepe it in so much water as will onely couer the Rice all ouer, and then the next day boyle it

in

in a pottle of water more, and the Rice so steeped will so swell, that all the first water will be drunke vp, and a great deale of lesse boyling will serue to make it ready, and sure then this a man cannot finde a cheaper way to feed men, ~~Take~~ one pint of water and the fourth part of a quarter of a pound of Rice (which comes not to aboue a halfe peny at the dearest reckoning) is a meale sufficient for a mans eating, hauing bisket and drinke proportionably. And this dish of meate being but thus thinne-boyled, is called at Sea Lob-lolly, and after salt-feeding is wondrous wholesome and comfortable to any man, whether he be sicke, sound, or diseased, and both abateth infirmities and hastneth the healing of all wounds. There bee others that after they haue steeped this Rice (as afore said) doe then boyle it in like manner, till it bee so thicke that a spoone may stand vpright in it, and no liquidnesse of the water perceiued, then put a good lumpe of butter into it, and boyle it with it, and stirre it about, and it will make it come most cleane out of the pot in which it is boyled; then season it with suger and a little Cynamon and it will be a dish of meat, right good and delicate, and meete for any man of what quality soeuer, that is worth goodnesse or preseruing, nor need the quantity exceed the proportion already described. Againe, if you haue meale in the Ship, if you take of this Rice steeped in water, and a little lightly boyled and seasoned with Suger, Cinamon, and Ginger, and a good quantity of butter, and then bake it in little Pasties, you shall find it a most delicat, pleasant, and wholesome meat, and that a penny in it shall goe further and giue better contentment then foure penniworth of Beefe, Bacon, Fish, or any other hard sale meat; yet doe not wish any man on Shipboard to make this a continuall feeding dish, for it is both too pleasant

and too strong, and where euacuation of some humors are wanting, may breed inconuenience in strong bodies; but rather to vse it once a weeke as a physicall nourisher, or for the comfort of sicke and diseased men, whose stomacks are rane away, or els weakned; there may be made of this Rice in time of necessity (being ground to a fine meale) an excellent good bread or ruske, which is pleasanter, sweeter, and much longer lasting then any made of Wheate, or any other graine whatsoeuer, besides many other seedes which would in this place shew but too much curiosity to repeate.

Wheate,
and the vse.

The next Graine vnto Rice which is of estimation and great seruice at the Sea, is Wheate, of which although there be diuers kinds, yet they are all alike for the seruing of this purpose; onely the large and thicke huld Wheate (being well dryed) will last the longest, but the smaller and fine skinde Wheate, yeelds the purer flower, and makes the better meate. Now of this Wheate is to be made diuers dishes of meat, for some doe take it and bruse or beat it in a bag, till the vpper skin be beaten off, and then hauing drest and winnowed it, boyle it in cleane water till it burst, and grow as thicke as pap, then take it from the fire, and being hot, put into seuerall dishes of wood, or traies, so much in euery dish or tray as may serue foure men, and so let it coole; then giue it to the sicke or sound, as you shall be directed, and it is an excellent wholesome good meat either cold or els hot, and a little butter melted with it, or being againe boild in fresh water, and seasoned with salt and a little sugar, it makes an excellent grewell, or lob-lolly which is very soueraigne at Sea; also your parcht wheat is a very good food at Sea, and of much request and estimation, being sprinkled with a little salt, and of this food a little will serue a man at a time, by reason

reason that the much sweetnesse thereof soone filleth and cloyeth the stomacke, yet it is wondrous light of digestion, and breeds great strength, and much good blood, as we daily find by experience.

The next Graine vnto this which is to be recommended to the Sea (and which is indeed not any thing inferior to either of the other going before, both for strength and lasting) is Oatemeale, which by reason of the great drynesse, and drying therof, fees little or no imperfection at the Sea, as being vnapt to sucke or draw in any of the ill or moist vapors thereof. Of this Oatemeale is made many good, fresh, and comfortable meats at Sea, as grewell, or lob-lolly, by boyling it in fresh water, and seasoning it with salt, and (if you haue it conueniently) sometimes with sugar and a few currants, and a little mace, which is meat of great strength and goodnesse, especially for such as are sicke and weake, for it is a great restorer of nature, and purger of the blood; also to steepe the whole grots of Oatemeale a night in water, and then draining them, and putting it into a bag, boyle it till the grots break, then putting it out of the bag, butter it with butter, and it is an excellent foode; also boyling Oatemeale in fresh water with barme, or the dregges and hinder ends of your Beere barrells, makes an excellent good pottage, and is of great vse in all the parts of the West Countrie, especially, where Marriners or Sea-men liue, and are called by the name of drousson pottage.

Also of Oatemeale is made that meate which is called in the West, Washbrew, and may bee made at the Sea at your pleasure, being a meate of that great account amongst Deuonshire and Cornish-men, that they will allow it no parallel; and for myne owne part I haue heard a most famous and well learned Physitian in those

Of Oatemeale and the vse.

good Syggt
the
good
Syggt.

parts allow it to bee a meate of singular great strength and goodnesse, and withall so light of digestion, that a man can very hardly surfeit vpon it at any time; and I am the rather induced to beleue the same, because I haue obserued and seene many of the labouring men of that Countrie to eate such an vnmeasurable quantity thereof, that in mine eye one mans supper would haue serued a whole familie.

But you will say, hunger and labour are such excellent sawces, that they will digest any thing. To that I answer, that I haue seene Gentlemen and Gentlewomen of that Countrie, of whom as much curiositie hath attended, as is lyable to the City, nay such as haue had sickenesse their best familiar, yet eate of this with great and sharpe appetite, and when health was most to bee feared, then to boast of most soundnesse. This washbrew is to looke vpon like Painters cize, or new made Ielly, being nothing but the very heart of the Oatemeale boyled and drained to that height and thicknesse, hauing neither hull nor bran in it, but the pure meale and water, and it is to be eaten either with wine, strong beare, or ale, or with clarified honie, according to mens stomackes or abilities. Now this the eaters thereof affirme, that by no means it must be chewed, but rather swallowed by the spoonfulls whole, because chawing like a pill makes it tast vnpleasantly. There is againe another meat to be made of Oatemeale, which is called Gertbrew, and is somewhat more course, and lesse pleasant then washbrew, hauing both the branne and hulls in it, yet is accounted a food of a very good strength, and exceeding wholesome for mans bodie, and of my knowledge much vsed and much desired of all labouring persons that are acquainted with it: Many other foods there are to be made of Oatemeale,

meale, but these shall be at this time fully sufficient.

The next graine to this I account Barley, which may be euery way vsed like vnto wheat, either to make grewel, to be creyed, parcht, or boyled: and of Barly for this purpose of food, the best is French Barley, the next is Barley big, or beare Barley, and the worst are the spicke or battle-dore Barley, and our common English Barley.

Of Barley,
and the vse.

And as Barley or Wheate, so you may vse your Bucke and your Indian *Silligo*, for they are of like nature, only aske a longer time in their beating, steeping, and boyling; because they are naturally more hard, and more dry, by reason of the heate of the climat in which the best grow; and it is euer to be obserued for a rule, that the dryer you keep your Corne at Sea, the better it is, the sweeter, and longer lasting.

Bucke, or
the vse.

Now hauing shewed the vse of these lighter graines, I will come to Pulse, and shew their vse and benefit at the Sea, or in besieged townes: and of Pulse, I will first speak of Beanes as a principall food, wholesome and strong, and though not so fine and light of digestion as any of the former, yet exceeding hearty and sound, and a great breeder of good blood; they are for the most part to be boyled whole, till such time as they appeare soft and tender, or begin to breake, and then drained from the water, are serued in traies, and well salted, and so eaten; a pottle whereof is thought a full proportion for foure men: and of these Beanes ther are diuers kinds, as the common garden Beane, or French Beane, which is great, broad, and flat, and these are the best to boyle, either with meate, or by themselves, and aske the least labour, because their outer skin is most tender, and the inward substance most apt to be mollified and softned: they may also be boyled both when they are yong and greene, and when they are old and.

Of Pulse,
and first of
Beanes, the
vse.

The French
Beane.

**The Kidney
Beane.**

and dry, and the meat at both times is good and sauory.

The next bean to these are the Kidney beane, which is flatter, and lesser, and neerer the proportion of a kidney then the French Beane is, and this is also a garden beane, and whilst it is yong & greene is to be eaten sallet wise after they are boyled, both the cod and beane together, and it is certaine a better sallet cannot be tasted; for the cod or husk is euery way as excellent in tast as the beane is; but after they grow old and dry, and that the moisture is gone out of the cod, then it is meete to thrash them, and then boyle them like the French beane, and they are euery way as good meate and as soone boyled and as tender.

**Common
Field beanes
the vse.**

The next Beane to these are your common and ordinary field beanes, which hauing tough and hard skins aske more boyling then the other beanes, and are somewhat harder in tast, yet a good sound foode also: there be many that parch them in the fire and thinke them then the best meate, because the fire sooner breakes the skin and softneth the kinnell; but they cannot be done so abundantly, and therefore are not so much in vse.

**Of pease
and the vse.**

After this great sort of Pulse, I will speake of the smaller sort, as Pease and their like: and of Pease there bee two kinds, the garden pease and the field pease, and for this vse (albeit both are good) yet the garden pease are best, for they are soonest boyled, are most tender, & serue for most vse, as for pottage, boyling, parching or spelting; and of these garden pease, there are diuers kinds; as white pease, French pease, hastings, rounsfuals, & such like; the first being the longest lasters, the second the pleasantest in taste, the third the earlyest and tenderest, and the last largest and fullest.

**Seuerall sorts
of garden
pease.**

The field Pease are onely of two kinds, as the white pease and the gray pease, and they seldome make pottage, because

because they are vnapt to breake, but are onely for boyling and making of leape Pease, or for parching, yet a good and a strong food also: and as we vse Pease, so in other Countries they vse Lupins, Lentils, Tares, Fetches, and such like smaller Pulse, but they are neither so good, wholesome, nor sauourie in taste, being a kinde of graine more ranke, fulsome, and breeding of ill blood and infection within, these in cases of Sea-fare and War-fare ought principally to be eschewed & shunned.

Now it resteth after this long digression of these severall Graines, and their vses, with the meats and profits which are made for them, that we come to the safe manner of keeping and preserving them either by land or water, for victuall or transportation, so as they may last and indure without ill smell or rottenesse.

And first for transportation of Graine by Sea, it is two wayes to be done, as either in great quantities for trade and the victualling of other nations, or in smaller quantity for victualling the men in the ship, prepared for a long and tedious voyage.

To transport Graine.

For the transporting of Graine for trade in great quantities, it is to bee intended the voyage is seldome long, but from neighbour to neighbour, and therefore commonly they make close decks in the ships to receive the Graine, faire and eaven bordered, yet if such decks bee matted and lined both vnder and on each side, it is much the better, and this matting would be strong and thinne; there be some which make the deckes onely of mats, and sure it is sweet, but not so strong as the board, therefore the best way of transportation is to haue strong boarded decks well matted, and then spreading the corne of a reasonable thicknesse, to cover it with matting againe, and then to lay corne on it againe, and then mats againe, that

Transporting graine for trade.

T

be

betweene euerie reasonable thickeesse of Graine a man may lye, the profit whereof is, that when the corne with his owne heat and the working of the Sea shall beginne to sweat, which sweat for want of ayre to dry it vp, would turne to putrifaction, then these mats thus lying between, will not onely exhale and sucke vp the sweat, but also keepe the Corne so coole and dry, that no imperfection shall come vnto it : and here is to bee noted, that these mats should rather be made of dry white bents, then of flags and bulrush, for the bent is a firme, dry, crispe thing, and will not relent or sweat of it selfe, but the flag or bulrush is a spongy and soft substance which is neuer empty of his owne and others moistures.

Transporting
Graine
for victuall.

Now for transporting of Graine for victuall for the ship, which is in much smaller quantity, because it is but for the priuate vse of few within the ship; the onely best and safest way is to take Salt-fish barrells, or any caske in which any Salt-fish hath beene piled, as Cod, Herrings, Salmon, Sprats, or any other powdred Fish; and whilst the vessels are sweet, you shall calke them both within and without with plaster, daubing them all ouer; then into them put your graine of what kind soeuer it bee, and head them vp close, and then stow them in such conuenient dry place of the ship as you shall thinke fit, and questionlesse, if beleefe may be giuen to the worthiest Authors which haue writ in this kind, you may thus keepe your graine sweet, sound, and in full perfection from one yeare to an hundred and twenty yeares; but certainly, daily experience shewes vs, that all kind of graine thus put vp and kept, will remain sound and sweet, three, foure, and as some say, seuen yeares, for so farre hath lately been tried: and what here I speake of ship-board, the like may be done in any towne of Warre or Garison, whether be-
sieged

sieged or not besieged, or in any other place where any necessity shall compell; the prooffe of this manner of piling or putting vp of graine, serueth as well for Land as Sea.

CHAP. XX.

The enriching of all manner of barren Grounds, and to make it fruitfull to beare Hops.



The Hop of all Plants is the most tender, and can endure neither too rich a ground, nor yet too poore, for being planted in the first, it bringeth forth onely leaues and no Bells, and in the latter it yeeldeth neither leaues nor Bells.

Now in the first sort of ground which is fertile and rich, I haue nothing to doe, but onely to aduise how you may allay and lessen that too much fatnesse, by mixing your hils well with Chalke or small sharpe Grauell, if it bee a hassell or mixt mould, and with good store of Red Sand if it be a stiffe Clay, for either of these mixtures will in short space abate any fertility.

But if the soile be contrary to this, that is, extreame barren, then you shall seeke by these meanes following to encrease the fertilitie: First, when you haue taken view of that barren earth, which you intend to conuert to a Hop-garden, you shall first looke to the situation thereof, whether it lye high or low, whether it be subiect to inundations or drownings, or that it lye safe and free from any such annoyance: if it bee subiect to great and deepe ouer-floues, then it is no ground for this purpose: but if it be onely lyable but to some small washings, then you may by a few small draines and sewers cast through your allies, conuey away the water vnto some lower ground,

*Additions
the whole
Chapter.*

*Abating of
fertility.*

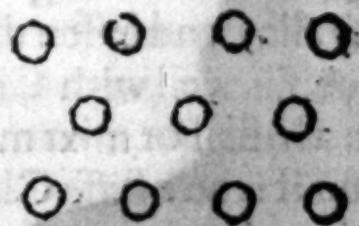
*Increasing
of fertilitie.*

*Choice of
Earth.*

*Draining of
Water.*

**Casting of
the hills and
allies.**

so as it may not continue long in the Gardens to do hurt. Besides, for a further safety to the Hopp, you shall make your hills a great deale bigger and higher, that when any over-flow shall happen, the water may not reach about the mid part of the hill at the most, for the root may endure moistning, but not drowning: and this water thus running through the allies, and not drowning the roots, will bring to the ground very much fertilitie. But howsoever after you have easde your ground of these particular faults, yet the general fault which is barrennes will remain still: therefore hauing plotted out your Garden, and fenced it sufficiently about, you shall then cast vp your hills about Michaelmas, placing them in a very orderly manner, and making allies between them of foure or five foot bredth between hill and hill, so as a man may walk at pleasure through and about them, neyther shall these hills stand all directly one behind another, for so one will ouer-shadow another, which is an annoyance, but according to this Figure, where there is a largeness of space, and a by-passage, through which the Sunne may come to giue comfort to euery plant. These hills if the ground be free from water may be raised about two foot, or a foot and a halfe high, & of a compasse answerable to the height; neither so little that the hill may be sharpe like a Sugar-loafe, nor yet so bigge, that the hill may lye flat, and so retaine and hold any raine, or wet, which shall fall vpon it; but you shall keep a due middle proportion, making the hill conuenient for your plants and poales, and so as it may shoot or put off any wet or other annoyance which shall fall vpon it.



Now these hills you shall not make entirely, all of the
one

one mould, but you shall take as it were a third part or better thereof; then another part of the earth which lyeth vnder dunghils, and the last part of Sope-ashes, and these three bodies you shall mixe equally together, and of them compound your Hop-hils. But if this seeme somewhat too difficult, and that you cannot finde enough for your purpose of either of these measures; then you may take three parts of the naturall earth, and but only a forth part of the other two, and thereof compound your hop-hils, and it will be sufficient to afford you profit enough; provided you be able once in three or foure yeares to renue it, for so long this will last in full strength and power.

The composition of enriching of Hils.

When you haue thus made vp your hils, you shall then pare vp with a paring shouell, all the Greene swarth quite through all your alleys, at least foure fingers thicke, and with the Swarth so pared vp, you shall couer all your hils almost to the top; turning the greeneswarth next vnto the earth, so as it may rot, for that is an excellent measure also. Then when your alleys are all thus cleansed of their swarth, you shall take good store of Braken or Ferne, and strawe it all ouer quite through all the alleys, that it may lye a good thicknes, almost to the midst of the hils, which hauing all the winter to rot in, will not onely be an exceeding comfort to the hils, and preserue both them and their Plants from many euils, but also being shouelled vp together with the earth in the Spring time, will bee a marvellous strong measure wherewith to replenish the Hils, and to make them to prosper exceedingly, and to saue much other cost and charges, as well in measure as in cariage.

Preparing of the alleys.

When your hils are thus enriched, and your alleys thus prepared, you shall then open your hils in the tops, and set your plants, that is to say, in euery hill foure plants at the least, being well prepared, and this should be done in the

The planting of Hops

moneth of October, and these plants must bee set good and deepe in the earth, and couered all ouer at the least foure fingers thicke; and if with the earth which covereth these plants, you mixe Oxe-blood and Lyme, it will not onely giue great comfort and nourishment to the plants, but also defend and saue the roots from wormes & other vermines, which otherwise would seeke to destroy them.

**Pulling of
Hops.**

After your garden is thus planted all ouer, you shall then let it rest till the following Spring, and about April finding the small twines of your Hops issued out of the hils, and running alongst the ground, you shal then set vp your poales, which poales so they bee long and straight may be of any wood you please, as either Ash, Elme, withy, willow, or Sallow, & in the setting vp of these poales you shal haue two very carefull respects: first, that in putting in of the poales, and fastning them within the earth, you doe not hurt the Hop Roots, which a small carelesnesse may doe, but be sure to set them cleare at the roots: and that you may doe it the better, and make your poales to stand the faster, it is good that you haue an iron Augar wherewith first to pearce the ground, and then to put the poale in after, and so run it in hard that it may not stir: the second care is that you place not one poale to ouer-shadow anothe, but that they may stand so cleere one from another, that which way so euer the Sunne shall cast his beames, yet euery plant (as it winds about the poale) may be an equall partaker of the same; this with a small obseruation in the setting vp of the poales, may easily bee performed. The number of poales that you shal set vpon euery hill, must bee answerable to the Syens which shall issue from the roots, allowing to euery poale two Syens at the least, and not aboue three at the most. These Syens (when your hils are poaled) you shall with their hands twine about

about their feuerall poales, and those which are but new peeping from the ground you shall so fould amongst the other branches, that they may of themselves run vp about the poale; & as these so also al the other twigs, which are any way deriued from the mayne Syen, leaning not any at all to runne vpon the ground, for that is altogether profitlesse, and to no vse.

For the weeding of this barren earth thus made into an Hop-garden, there is little care to be had: for first the sopeashes wherewith the hils are meanured, the oxe-blood and the Lime, are such enemies to all manner of weeds, that they will not suffer any to grow where they abide: Next the Braken and Ferne which couereth the alleys is such a poisoner and smotherer of any thing that shall grow vnderneath it, that it will not suffer any weed to peepe or spring vp through it; yet if in any especiall place where neither of these defences come, it happen that any weeds doe grow, then you shall with your best care cut them away, or pull them vp, and so your garden shall remaine comely, pleasant and fruitfull to euery prospect.

Of weeding hops.

CHAP. XXI.

A generall computation of men, and cattels labours: what each may doe without hurt daily.

O speake generally of all husbandly workes where the countrey is tolerable without any extraordinarie difficultie, you shal vnderstand that a man may well in stiffe ground, plow an acre, or an acre and an halfe, and in light sand grounds two or three acres with one teame in a day, and he may plow and sow in stiffe ground two acres and a halfe each day, and in light ground foure at least with one Teame,

Plowing, and sowing.

Teame, and alwayes what he soweth, that he may harrow the same day also.

Mowing.

A man may well mowe of good and deepe loggy meadow, or of rough vneuen meadow, euery day one acre, mowing cleane and making a smooth board: of well standing and good smooth meadow an acre and a halfe each day: and of very thinne and short grasse, or vpland meadow two acres at the least euery day.

Also, he may mowe of Corne, as Barley and Oates, if it be thicke, loggy and beaten downe to the earth, making faire worke, and not cutting of the heads of the eares, and leauing the straw still growing, one acre and an halfe in a day: but if it be good, thicke and faire standing corne, then hee may two acres, or two acres and a halfe in a day: but if the corn be short and thin, then he may mowe three, and sometimes foure acres in a day, and not bee ouer-laboured: Also of Beanes he may mowe as much, and of Pease mixt with Beanes, having a hooke to follow him, no lesse; for they are workes in this nature most easie and least troublesome.

Reaping.

One man with a binder may well reape an acre of Wheat, or Rye in a day, if it be principall good and well standing, but if laid or beaten downe with weather, then three roode is fully sufficient for a dayes labour; but if it be thin and vpright standing, then he may reape and bind fise roods in a day: of small Pease, Fetches, and such like, a man may well reape two acres euery day.

Binding of
Barley and
Oates.

Now forasmuch as it is a custome in diuers countreys (and truely is exceeding profitable and worthy imitation) to sheafe and bind vp both Barly and Oates, as well as Wheat or Rye, and that it both saueth much Corne, and also makes it take a great deale lesse roome, and that this labour is to be done after the mowers, as the other was
after

after the reapers by gathering the Barley or Oats vp with a sickle or hooke, as it lyes in the swath, and so binding it in sheaues, you shall vnderstand that one man in a day will binde as much as one mower can mowe; and if the men be any thing skilfull in the labour, two binders will binde as much as three mowers can mowe.

For the gathering or inning of graine, no man can proportion the number of loads, or quantitie of ground shall daily be brought home, sith the iourneys are vncertaine, some going a quarter of a mile, some halfe a mile, & some a mile: therefore it is the Husband-mans best way, the first day to goe with his Teame himselte, and both to obserue the labour and distance of place, and by that to compute what may be done after without hurt to his cattle, and where he failes of any hope, there to take a strict account of the error; for it is either ignorance or carelesnesse, which brings forth mischances, speaking of husbandry, as ouerthrowing the Teame, ouer-loading the Teame, breaking necessary instruments, or not respecting the wayes and passage, any of which may in a day hinder more then halfe the dayes labour.

Gathering
in of graine.

Againe, a man may in a day ditch and quick-set of a reasonable ditch foure foot broad, and three foot deep, a rod or a poll a day, allowing fixteene foot to the rod, and so of larger measure lesse ground, and of lesse ground larger measure, according to the sufficiency of the fence which you purpose to make.

Ditching.

A man also may hedge in a day, if the hedge bee good and substantiall, that is to say, five foot high, well bound, thicke stackt, and close layed, two rod in a day, and if the worke bee lower or thinner then double so much, according to the former proportion.

Hedging.

For this plashing of hedges, or making a quicke fence if

Plashing

he do it workmanly, & that the quick growth be high and well growne; and then he lay it thicke, close, and strongly bound on the top, turning the quicke downward and inward; to plash a rod a day is as much as any man can well doe, but if yee plash it after the West countrey fashion, that is, onely cutting it downe, and laying it along close to the ground, seeking onely thicknesse, and not much guard or comelinesse, then hee may well plash a rod and a halfe in a day without trouble, and sure in this worke is great care and art to be vsed as well for the preservation of the quicke, as the goodnesse of the fence, being a thing of worth and validitie to euery husbandman.

Delving.

Again, a man may delue or digge, as for garden mould, hempe-yard, Flaxeyard, or for the setting of Corne, or leuellling of vneuen places, one rood in a day, and the ground so digged and delued, hee may rake dresse and leuell in the same day also, but if hee digge it deepe, and trench it, and measure it, as is meet; either for garden, orchard, or corne setting, then to delue halfe a rood in a day, is a very great proportion, because ordinarily to delue, as to receiue ordinarie seeds, requires but one spade graft in depth, but extraordinarily to delue, as for enriching and bettering of the ground, and to cleanse it from stones, weeds and other annoyances, will require two spade graft at the least.

Thrashing.

Lastly, a man may thrash if the corne be good & cleane, without some extraordinary abuse or pouerty in the graine, in one day foure bushels of Wheat or Rye, sixe bushels of Barly or Oats, and fiue bushels of Beanes or Pease, but the Pulse must then bee imagined to bee exceeding good, otherwise a man shall thrash lesse of it, then of any other kinde of graine, for as when it is well loaden, it yeeldeth plentifully, so when it is poore and lightly loden, it

it yeeldeth little or nothing, and yet hath not one stroke lesse of the flaile, nor any labour saved more then belongs to the best Pulse whatsoeuer being euer at least three times turned, and foure times beaten ouer.

Having thus generally runne ouer (in a short computation) the labours of the husbandman, I will now as briefly as I can, goe ouer the particular dayes labours of a Farmer or Plowman, shewing the particular expence of euery houre in the day, from his first rising, till his going to bed, as thus for example: wee will suppose it to bee after Christmas, and about plow day (which is the first letting out of the plow) & at what time men either begin to fallow, or to break vp Pease earth which is to lye to bait, according to the custome of the countrey; at this time the Plowman shall rise before foure of the clocke in the morning, and after thanks given to God for his rest, and the successe of his labours, he shall goe into his stable, or beast house, and first he shall fodder his cattle, then cleanse the house, and make the bootes cleane; rubbe downe the cattle, and cleanse their skinnes from all filth, then hee shall curry his horses, rubbe them with cloathes and wispes, and make both them and the stable as cleane as may be, then hee shall water both his oxen and horses, and housing them againe, giue them more fodder, and to his horse by all meanes provender, as chaffe and dry Pease or Beanes, or Oat-huls, Pease or Beanes, or cleane Oates, or cleane garbidge (which is the hinder ends of any kinde of graine but Rye) with the straw chopt small amongst it) according as the abilitie of the Husbandman is.

The particular expence of a day.

¶ And whilst they are eating their meat, he shal make readie his collars, hames, treates, halters, mullens, and plow-gears, seeing euery thing fit, and in his due place, and

to these labours I will also allow full two houres, that is, from foure of the clocke, till fixe, then shall he come in to breakfast, and to that I allow him halfe an houre, and then another halfe houre to the gearing and yoaking of his cattle, so that at seuen of the clocke he may set forward to his labour, and then hee shall plow from seuen of the clocke in the morning, till betwixt two and three in the afternoone, then he shall vnyoake and bring home his cattell, and hauing rub'd them, drest them, & cleansed away all durt and filth, hee shall fodder them, and giue them meat, then shall the servants goe in to their dinner, which allowed halfe an houre, it will then bee towards foure of the clocke, at what time hee shall goe to his cattle againe, and rubbing them downe, and cleansing their stalles, giue them more fodder; which done, hee shall goe into the barnes, and provide and make ready fodder of all kinds for the next day, whether it be hay, straw, or blend fodder, according to the abilitie of the Husbandman: this being done and caried into the stable, oxe house, or other convenient place, he shall then goe water his cattle, and giue them more meat, and to his horse provender as before shewed: and by this time it will draw past fixe of the clocke, at what time he shall come in to supper, and after supper hee shall either by the fire side, mend shooes both for himselfe and their family, or beat and knocke hempe, or flaxe, or picke and stampe apples, or crabs for cider or verduice, or else grinde malt on the quernes, picke candle-rushes, or doe some husbandly office within doores till it be full eight a clocke: Then shall he take his Lanthorne and candle, and goe to his cattle; and hauing cleansed the stalles and planks, litter them downe, looke that they be safely tyed, and then fodder and giue them meat for all night, then giuing God thanks for
be.

benefits receiued that day, let him and the whole household goe to their rest till the next morning.

Now it is to bee intended, that there may bee in the household more seruants then one; and so you will demand of me what the rest of the Seruants shall be imployed in before and after the time of plowing: To this I answer, that they may either goe into the barne and thrash, fill or empty the malt fat, load or vnload the kilne, or any other good and necessarie worke that is about the yard, and after they come from plowing, some may goe into the barne and thrash, some hedge, ditch, stop gaps in broken fences, dig in the Orchard or Garden, or any other out work which is needfull to be done, and which about the husbandman is neuer wanting, especially one must haue a care euery night to look to the mending or sharpening of the Plow-irons, and the repairing of the Plow and Plow geares, if anie bee out of order, for to deferre them till the morrow, were the losse of a dayes worke, and an ill point of husbandry.

Now for the particular labours of Cattell, though it bee alreadie inclusiuely spoken of in that which is gone before, where I shew you how much a man may conveniently plow in a day with one Teame or draught of cattell, yet for further satisfaction, you shall vnderstand, that in your cattel there are many things to be obserued, as the kind, the number, and the soile they labour in, for the kind which are Oxen, Bulls, or Horses, the best for the draught, are Oxen, and the reasons I haue shewed in my former workes, the next are Horses, and the worst Bulls, because they are most troublesome; the number fit for the plow is eight, sixe, or foure; for the Carr, five or foure; and for the Waine neuer vnder sixe, except in leading home of haruest, where loading easily, foure very

Particular
labours of
Cattell.

good Oxen are sufficient, for the soile if it bee of the toughest and deepest earth, eight beasts can doe no more but fallow or breake vp Pease earth, no nor fewer stirre, if the season grow hard and dry; for soyling, winter rigging, and seed furrow, six beasts may dispatch that labour: if the soile be mixt and hassell, then sixe may fallow and sow Pease, and foure doe euery other ordure: but if it bee light and easie sand, then foure is enow in euery season. For the quantity of their worke, an ox-plow may not doe so much as a horse-plow, because they are not so swift, nor may be driuen out of their pace, being more apt to surfet then horses bee, so that for an ox-plow to doe an Acre, and a horse-plow an Acre and a rood, or an Acre and an halfe in good Ground, is worke fully sufficient.

CHAP. XXII.

The applying of Husbandry to the seuerall Countreies of this Kingdome, wherein is shewed the office and duty of the Carter or Plowman.



IT is to be vnderstood that Husbandry doth varie according to the nature and climats of Countreies; not one rule obserued in al places, but according as the earth, the ayre, the much or little heat, moisture or cold doth increase or diminish, so must the skilfull Husbandman alter his seasons, labours and instruments; for in stiffe Clayes, as are all the fruitfull Vales of this Kingdome (of which I haue named most part in a Chapter before) as also Huutingtonshire, Bedfordshire, Cambridgeshire, and many other of like nature, all manner of arable works must

must be begun betimes in the yeare, and the plowes and instruments must be of large size and strong timber, and the labour great and painfull: so also in mixt soiles that are good and fruitfull, as Northamptonshire, Hartfordshire, most part of Kent, Essex, Barkshire, and Countries of like nature, all arable toyles would begin at later seasons, and the plowes and instruments would be of middle size and indifferent timbers, and the labour somewhat lesse then the other: but the light sandy grounds which haue also a certaine naturall fruitfulnessse in them, as in Norfolke, Suffolk, most part of Lincolnshire, Hampshire, Surry, and Countries of that nature, all arable toiles would begin at the latest seasons, and the plowes and instruments would be of the smallest and lightest size, and of the least timber, and the labour of all other is easiest.

Lastly, for the barren vnfruitfull earths (of which only I haue written in this Booke) as is Deuonshire, Cornwall, many parts of Wales, Darbeshire, Lancashire, Cheshire, Yorkshire, and many other like or worse then they, the arable toiles would haue a fit season of the yeare, according to the temperatenesse of the yeare, which if it happen earely, then you must begin your labours at later seasons, and for your plow and instruments, they must not keepe any certaine proportion, but bee framed euer according vnto the ground, the stronger & stiffer ground hauing euer the strong and large plow with instruments of like kind, and the lighter earth, a plow and instruments of more easie substance; as for the labour, it must be such and no other then that which hath beene already declared in this booke.

And hence it comes that the office and dutie of euery The Carter
skilfull plowman or carter, is first to looke to the nature office.
of the earth, next to the seasons of the yeare, then to the
customes

customs and fashions of the place wherein hee liueth : which customs although they be held as second natures amongst vs, and that the best reasons of the best workemen commonly are, that thus I doe because thus they doe ; yet would I wish no man to binde himselfe more strictly to custome, then the discourse of reason shall bee his warrant, and as I would not haue him too preiudicate in his owne opinion, so I would not haue him too great a slaue to other mens traditions, but standing vpon the ground of reason made good by experience, I would euer haue him profit in his owne iudgement. Now the further office and duty of the Husbandman, is with great care and diligence to respect in what sort or fashion to plow his ground; for although I haue in the former chapters shewed how he shall lay his furrowes, what depth he shall plow them, and how hee shall bee able to raise and gaine the greatest store of mould, yet is there also another consideration to bee had, no lesse profitable to the husbandman then any of the former, and that is how to lay your lands best for your owne profit and ease, as also the ease of your Cattell, which shall draw wi thin your draught : as thus for instance : if your arable land shall lye against the side of any steepe hill (as for the most part all barren earths doe) if then you shall plow such land directly against the hill, beginning below, and so ascending straight vpright and so downe againe, and vp againe ; this very labour & toiling against the hill will breed such a bitter wearisomnesse to the cattell, and such a discouragement, that you shall not be able to compasse one half part of your labour ; besides, the danger of ouer-heating and surfetting of your Beasts, whence will spring many mortall diseases : Therefore when you shall plow any such ground, be sure euer to plow it side-wayses overthwart

thwart the hill, where your beasts may euer tread on the leuell ground, and neuer directly vp and downe, so shall the compasse & measure which you lay vpon the ground not bee so soone washt away from the vpper part of the ground, because the furrowes not lying straight downe in an eauen and direct descent, but turned crosse-wise vward against the hil, it must necessarily hold the soile within it, and not let it wash away.

Againe, it is the office of euery good Plow-man to know what Cattell are meetest for his draught; as whether Oxen, or Horse, or both Oxen and Horse: wherein is to bee vnderstood, that although of all draughts whatsoever within this kingdome, there is none so good to plow withall, both in respect of the strength, stability, indurance and fitnessse for labour, as the Oxen are, in whom there is seldome or neuer any losse, because whensoever his seruice faileth in the draught, his flesh will be of good price in the shambles; yet notwithstanding in this case a man must necessarily bind himselfe much to the custome of the Countrey, and fashion of his neighbours; for if you shal liue in a place where fuel is scarce, and far to be fetcht, as commonly it is in all barren Countries, which for the most part are stony Champaines or cold Mountaines; and your neighbours as well for the speed of their iournies, as for the length keepe horse draughts: in this case you must also doe the like, or else you shall want their companies in your iourney, which is both discomfort and disprofit if any mischance or casualty shall happen, or being inforst to driue your oxen as fast as they do their horse you shall not only overheate, tire, bruiſe, & spoile them; but also make them vtterly vnfit either for feeding or labour: and therefore if your estate be mean, and that you haue no more but what necessitie requires, then you shall

X

Of Cattell
for draught.

sort

fort your Plow or Teeme according to the fashion of your Countrey, and the vse of your neighbours : but if God haue blest you with plenty, then it shall not be amiss for you to haue euer an Oxe draught or two to till your Land; and a Horse draught to doe all your forraine and abroad busineses : so shall your worke at home euer goe constantly forward, and your outward necessarie provisions neuer be wanting. Now for the mixture of Oxen and Horse together, it falleth out oftentimes, that the Plowman must of force be provided with cattell of both kind, as if he happen to liue in a Rockie Countrey, where the steepness of the hills, and narrowness of the waies will suffer neither Cart, Waine, nor Tumbrell to passe; in this case you shall keep Oxen for the Plow to till the ground with, and Horses to carie pots or hookes : the first to carie forth your measure, and the other to bring home your hay and corne harvest, your fuell and other provisions which are needfull for your familie; as they do both in Cornwall, and all other mountainous countries, where Carts and Waines and such like draughts, haue no possible passage.

Againe, it is the office and dutie of euerie good Plowman to know his seuerall labours for euerie seuerall Moneth though the whole yeare, whereby no day nor houre may bee misspent, but euerie time and season employed according as his nature requireth : as thus for example.

January.

In the moneth of Ianuary, the painfull Plowman; if he liue in fertile and good soiles, as among rich, stiffe, simple clayes, hee shall first plow vp his pease earth, because it must lie to take baite before it be sowne; but if hee liue in fruitfull well mixt soyles, then in this moneth hee shall begin to fallow the field he will lay to rest the yeare follow.

following ; but if hee liue vpon hard barren earths (of which chiefly I write) then in this moneth hee shall water his Meadows and Pasture grounds, and he shall draine and make dry his arable grounds, especially where he intends to sow Pease, Oates, or Barly, the seed-time following. Also he shall stub vp all such rough grounds as he intends to sow the yeare following, and shall meanure and trim vp your Garden moulds, you shall comfort with meanure, sand, or lime, or al three mixt together, the roots of all barren fruit trees : and also cut downe all such timber, onely there will be losse in the barke, for the time is something too early for it to rise. Lastly, you may transplant all sorts of Fruit trees, the weather being open, and the ground easie: you may reare Calues, remoue Bees, and for your owne health keepe your bodie warme, let good diet and wholesome be your Physitian, and rather with exercise then sauce, encrease you appetite.

In the Moneth of Februarie, either set or sow all sorts of Beanes, Pease, and other Pulse, and the stiffer your ground is, the sooner begin your worke, prepare your garden mould, and make it easie and tender, prune & trim all sorts of Fruit trees from mosse, cankers, and all superfluous branches; plash your hedges, and lay your quicksets close and intire together; plant Roses, Gooseberries, and any fruit that growes vpon little bushes; graft at the latter end of this moneth vpon young and tender stockes, but by all meanes overlade not the stockes. February

Lastly, for your health, take heed of cold, forbear meats that are slimy and flegmatique, and if need require, either purge, bathe, or bleed, as Art shall direct you.

In the moneth of March, make an end of sowing of all sorts of small pulse, and beginne to sow Oates, Barly, and Rye, which is called March Rye; graft all sorts of fruit trees, March

trees, and with young plants and syens replenish your Nurcery, couer the roots of all trees that are bared, and with fat earth lay them close and warme: if any tree doe grow barren, bore holes in the root, and driue hard wedges or pins of oake wood therein, & that will bring fruitfulness: transplant all sorts of Sommer flowers, and giue new comfort of manure and earth to all early outlandish flowers, especially to the *Crowne Emperiall*, *Tulippes*, *Hyacinth*, and *Narcissus*, of all shapes and colours, cut downe vnder wood for fuell and fencing, and looke well to your Ewes, for then is the principall time of yeaning: And lastly, bathe often, bleede but vpon extremitie, purge not without good counsell, and let your dyet bee coole and temperate.

April.

In the moneth of Aprill finish vp all your barley seed, and begin to sow your hempe and Flax: sow your garden seeds, and plant all sorts of herbes; finish grating in the stocke, but beginne you principall inauguration, for then the rynd is most plyant and gentle: open your hives, and giue Bees free liberty, leaue to succour them with food, and let them labour for their liuing. Now cut downe all great Oake timber, for now the barke will rise, and bee in season for the Tanner. Now scowre your ditches, and gather such manure as you make in the streets and high-ways, into great heapes together; lay your meadowes, sleight your corne grounds, gather away stones, repaire your high-ways, set Ozyers and Willows, and cast vp the bankes and mounds of all decayed fences.

Lastly, for your health, eyther purge, bathe or bleed, as you shall haue occasion, and vse all wholsome recreation, for then moderate exercise in this moneth, there is no better Physicke.

May.

In the moneth of May sow barley vpon all light sands

sands & burning grounds, so likewise do your hempe and flaxe, & also al sorts of tender garden seeds as are Cucumbers and Mellons, and al kind of sweet smelling hearbs and flowers; Fallow your stiffe clayes; Sommer stirre your mixt earths, and foyle all light & loose hot sands: prepare all barren earth for Wheat and Rye, Burne bait, Stub gorse or Furses, and root out Broome and Ferne: begin to fould your sheepe, lead forth measure, and bring home fuell and fencing, weed your winter corne, follow your common wotkes, and put all sorts of cattle to grasse, either in pasture or teather: put your Mares to the horse, let nothing be wanting to furnish the Dairy: and now put off al your winter-fed fat cattle, for now they are scarcest and dearest, put yong steares and dry kine now to feed at fresh grasse, and away with all Pease fed sheepe for the sweetness of grasse mutton will pull downe their prices.

Lastly for your health, vse drinckes that will coole and purge the blood, and all other such physicall precepts, as true Art shall prescribe you: But beware of Mountebanks and old wiues tales; the latter hath no ground, and the other no truth but apparant cosenage.

In the moneth of Iune, carie sand, marle, lyme, and measure of what kinde soeuer to your land; bring home your coales and other necessary fuell fetcht farre off, sheare early fat sheepe, sow all sorts of tender hearbs, cut ranke low medowes, make the first returne of your fat cattle, gather early Sommer fruits, distill all sorts of Plants and hearbs whatsoeuer.

And lastly for your health, vse much exercise, thin dyet, and chaste thoughts.

In the moneth of Iuly, apply your hay-haruest, for a day slackt is many pounds lost, chiefly when the weather is vnconstant, sheare al manner of field sheepe, Sommer stir rich

Iune.

Iuly.

rich stiffe grounds, foyle all mixt earths, and latter foyle all loose hot sands, let hearbs you would preserue, now runne to seed, cut off the stalkes of outlandish flowers, and couer the roots with new earth, so well mixt with measure as may be, sell all such Lambes as you feed for the Butcher, and still leade forth sand, marle, lyme and other measure; fence vp your Copses, graze your elder vnderwoods, and bring home all your field-timber.

And lastly for your health, abstaine from all Physicke, bleed not, but vpon violent occasion, and neither meddle with Wine, Women, nor other wantonneffe.

August.

In the moneth of August apply your Corne-haruest, sheare downe your Wheat and Rye, mowe your Barley and Oats, and make the second returne of your fat sheepe and cattle; gather all your Sommer greater fruit, as plums, apples, and peares, make your sommer or sweet Perry & Cider; set slips and Syens of all sorts of Gilly-flowers, and other flowers, & transplant them that were set the spring before: and at the end of this moneth, begin to winter-rigge all fruitfull soiles whatsoeuer; geld your Lambes, cary measure from your doue-coats, and put your Swine to the early or first mast. And lastly for your health, shun feasts and banquets, let physick alone, hate wine, and only take delight in drinckes that are coole and temperate.

September.

In the moneth of September, reape your Pease, Beanes, and all other Pulse, making a finall end of your haruest; now bestow vpon your wheat land your principall measure, and now sow your Wheat and Rye, both in rich, and in barren climats; now put your swine to mast of all hands, gather your winter fruit, and make sale of your wooll, and other sommer commodities; now put off those stocks of Bees, you meane to sell or take for your owne vse; close thatche, and dawbde warme, all the furni-
uing

uing hiues, and looke that no droanes, mice or other vermine be in or about them, now thatche your stackes and reekes, thrash your seed Rye and Wheat, and make an end with your cart of all foraine iourneys.

Lastly, for your health in this moneth vse Physicke, but moderately, forbear fruits that are too pleasant or rotten, and as death shun ryot and surfet.

In the moneth of October, finish vp your Wheat-seed, October. scowre ditches and ponds, plash and lay hedges & quick-set, transplant, remoue, or set all manner of fruit-trees of what nature or qualitie soeuer; make your winter ciden and perry, spare your priuate pastures, and eate vp the corne-fields and commons, and now make an end of winter ridging, draw furrowes to draine and keepe dry your new sowne Corne, follow hard the making of your malt, reare all such calues as shall fall, and weane those foales from your draught mares, which the Spring before were foaled: now sell all such sheepe as you will not winter, giue ouer folding, and separate Lambes from the Ewes which you purpose to keepe for your owne stocke.

Lastly, for your health refuse not any needfull phyicke at the hands of the learned Phyician, vse all moderate sports, for any thing now is good which reuiueth the spirits.

In the moneth of Nouemb. you may sow either wheat, November. or Rye in exceeding hot soyles, you may then remoue all sorts of fruit trees, and plant great trees, either for shelter or shadow: now cut down all sorts of timber, for plowes, carts, axeltrees, naues, harrows, & other husbandly offices, make now the last returne of your grassfed cattle; bring your swine from the maste, and feed them for slaughter, reare what calues so euer fall, & breake vp all such Hemp and Flaxe as you intend to spin in the winter season.

Lastly,

Lastly, for your health, eate wholesome and strong meats, well spiced and drest, free from rawnesse, drinke sweet wines, and for digestion euer before cheese prefer good and moderate exercise.

December.

In the moneth of December, put your sheepe and swine to the Pease reekes, and fat them for the slaughter and market; now kill your small Porks and large Bacons, lop hedges and trees, saw out your timber for building, and lay it to season, and if your land bee exceeding stiffe, and rise vp in an extraordinarie furrow, then in this moneth begin to plow vp that ground whereon you meane to sow cleane Beanes only, now cover your dainty fruit trees all ouer with canuase, and hide all your best flowers from frosts and stormes with rotten old horse litter; now draine all your corne-fields, and as occasion shall serue, so water and keepe moist your medowes; now become the Fowler with piece, nets and all manner of engin, for in this moneth no foule is out of season: Now fish, for the Carpe, the Breame, Pyke, Tench, Barbel, Peale and Salmon. And lastly, for your health, eate meats that are hot and nourishing: drinke good wine that is neat, sprightly and lusty, keep thy body well clad, and thy house warme, forsake whatsoeuer is flegmatick, and banish all care from thy heart, for nothing is now more vnwholesome, then a troubled spirit.

Many other observations belong vnto the office of our skilfull Plowman or Farmer; but since they may be imagined too curious, too needlesse, or too tedious, I

will stay my pen with these already rehearsed, and thinke to haue written sufficiently,

touching the application of
grounds and office of the
Plowman.

F I N I S.